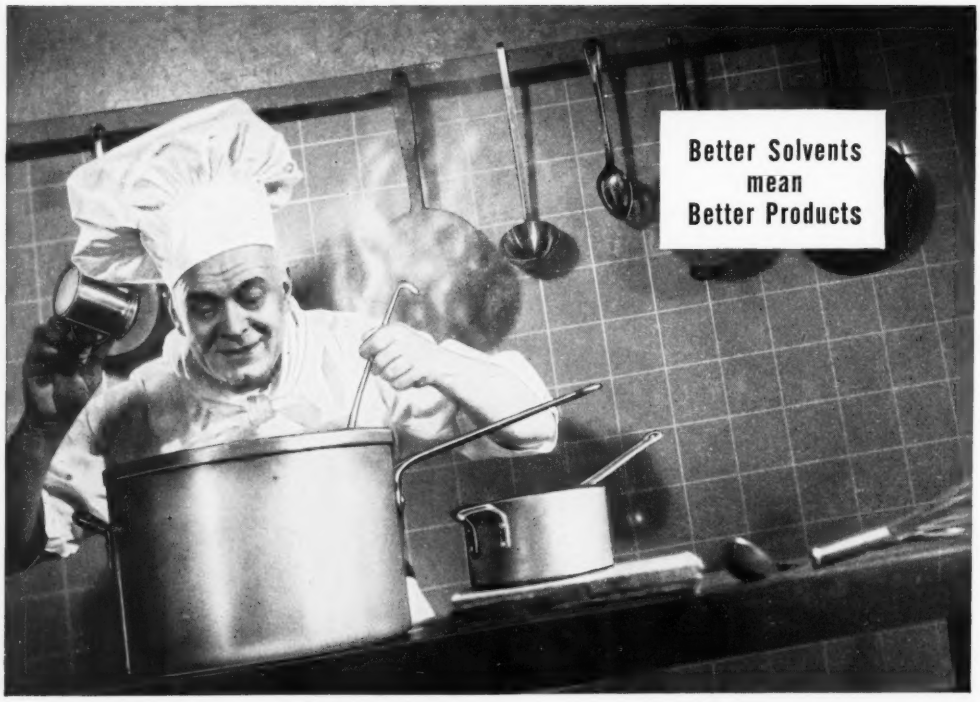
THE Soybean Digest

Keep Ahead of Those Weeds!

Official Publication

AMERICAN SOYBEAN ASSOCIATION

VOLUME 11 • NUMBER 7 MAY • 1951



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THE *Soybean Digest*

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HUDSON, IOWA

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IN THIS ISSUE

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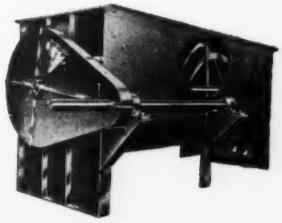

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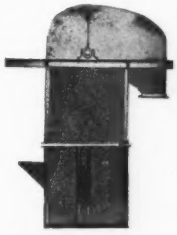

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IT'S TIME TO FACE COLD FACTS!

On these editorial pages we have repeatedly called attention to the inferior quality, especially from the standpoint of foreign material content, of soybeans reaching European markets from the U. S. Percentages of split beans and especially unrelated foreign material have been extremely high on arrival of the beans in European ports. Your editor saw cargoes delivered at Hamburg and Bremen which were vastly different than the buyer would like to have, and different than the domestic processor would consider.

We have repeatedly called attention to the probability of our losing foreign markets unless we ship a better quality product. It was inevitable that European buyers would turn elsewhere. We held the markets because no other supplies were available.

Now, with soybean supplies showing up in other parts of the world, we are in danger of losing just as much of the market as can be supplied from other countries. The following article, taken from the London Public Ledger of Apr. 5, confirms the trend. What was our market is

GERMANY FINDS CHINESE SOYA BEANS ACCEPTABLE

Imports of Chinese soya beans into Western Germany in the five months ended January 31st reached 77,000 tons, says a report by the U.S. Consulate General at Hamburg.

These imports were stated to be "of such excellent quality that the industry regards them as their best buy since the war."

The beans contained no dust or admixture the report goes on, and there were very few splits. Furthermore, it is said the beans yielded 18 per cent oil as compared with 16.5 per cent from the United States soya beans imported in recent months.

—London Public Ledger

going fast. Unless we do something about it this market will continue to disappear.

Recognizing the trend of events and the importance of a market that absorbed 62 million bushels in 1949, 50 million bushels in 1950 *and only 11 million bushels in the first 4 months of 1951*, it is time the soybean growers moved toward assuring the shrinking market the type of product it wants.

Basically, the fault does not lie at the grower level. Instead of tightening the grading standards the grain branch of PMA changed them on Sept. 1, 1949, to allow more foreign material. Upon the petition of the American Soybean Association, a series of hearings were held during the past winter to consider our proposal that allowable foreign material be reduced by one percent in each grade. Following the hearings, where grain dealers vigorously opposed the proposed changes, decision was made to make no changes. Thus, we are still plagued with grading standards which for export purposes have no practical value. Grain dealer organizations would apparently prefer to have their members handle no export soybeans, than to do the small amount of additional grading which would have been necessary under the proposal.

Most soybean growers of America are delivering an excellent average quality soybean. They are being penalized for doing so. They will not continue it for long. 1950-crop beans were in good shape, averaged low in foreign material. In passing through local elevators they retained that good average quality. But between the time they left country points and the time they were delivered at foreign ports they somehow seemed to acquire every allowable pound of wheat screenings, weed seeds, corn, oats, and a host of commodities not related to or grown with the soybean crop.

We may as well face the cold facts of life. We are losing our export market for soybeans. We are losing it because we seem determined to make the buyer take something he does not want. If we are so naive as to believe we can continue such a practice then we deserve no export markets.

Handlers are blending foreign materials into relatively clean soybeans. The practice has been going on since the export market opened up in Apr. 1949. An attempt to correct a bad situation through tightening of the grain grading standards on soybeans was unsuccessful. There are two courses of action left open:

1—Continue to lose our export markets, cut back our soybean production to the bushelage needed to supply our own needs. This means under-production in unfavorable cropping years, consequent oil and protein shortages. It also means no foreign markets to fall back on, thus extremely low prices in years of heavy production.

2—Diversion of the export business on soybeans into the hands of men or companies prepared to sell on buyers' specifications or on sample, entirely aside from the federal grades. Per bushel cost to the buyer will be slightly more on this basis, but per pound cost of usable materials will be somewhat less.

We favor the second course. It will mean stable markets, year after year. It will mean continued expansion over a period of years. It will mean prices will be established by world competition, not by domestic ideas of value. It will also mean ignoring our present totally inadequate soybean grading standards. It will mean higher prices to the grower who markets a high quality crop, and to the handler who is willing to do a careful job of handling, and who will remove weed seeds, stems, pods, sticks and undesirable foreign material at point of origin rather than trying to pawn it off on somebody half way around the world at soybean prices.

With the largest crop in history—50 million bushels more than ever before—our export market shrinks steadily. Will we do something about it? Or will we continue to believe the rest of the world must buy from us, whether it wants to or not?

Our foreign markets have so much to offer that it is unbelievable that we, a supposedly intelligent people, will continue to bury our heads in the sand.

EDITOR'S DESK

NOW GREATER THAN EVER

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Here's the new Steinlite Model 400-G Electronic Moisture Tester, completely redesigned to combine valuable *new* advancements and time-tested features of previous models.

And, here's how the Steinlite helps bring you *greater* returns! *Moisture is an important profit factor in your business*—in buying and selling, in processing and storing. The speedy, dependable, easy-to-use Steinlite is essential in every phase of your operation where moisture content determines price, grade or quality. You can make an *accurate* test in one minute without destroying the sample. A Steinlite instantly gives you the true moisture content of a wide variety of free-flowing materials. Charts have already been prepared for more than 200 products.

This new Model 400-G Steinlite covers a broader moisture range than former models—quickly registers as low as 1½% on peanuts and up to 50% on high moisture corn. Meter readings are made more accurately with a single selector switch. A dial thermometer, built into the instrument, makes temperature adjustments easier. A longer trouble-free life is assured by the increased stability of the electronic circuit and rugged chassis. Charts are calculated to check with government inspection points. Test pads are available to check the electrical accuracy of the machine.

The reliable, economical, constantly improved Steinlite, the result of 20 years of continuous research, is the world's most popular moisture tester. Remember, too, that for 39 years Seedburo has provided the most highly developed moisture testing service in America. Take advantage of it by bringing your moisture testing problems to Seedburo . . . now!

Inquire about the trade-in allowance on your present Steinlite Moisture Tester.

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More Sales Boosters

This is the spring and summer to boost your sales of feeds for hogs to record levels. This series of four ads prepared by the same topflight artist who designed the series B ads on feeding cattle will help you do the job.

The ads have been specially written for feed dealers, processors, elevators and others for newspaper use.

To partially cover cost, you may have the set of four newspaper mats for $1.25; 10 sets for $1 each.

Order Series C on hog feeding from: American Soybean Association, Hudson, Iowa.

We still have some of the Series B mats on cattle feeding left. Same price as above. Or we'll send you proofs of both sets if you wish.

It's Sept. 6, 7 and 8

Preliminary plans for the 1951 convention of the American Soybean Association have now been completed, following a meeting of the convention committee, consisting of Geo. M. Strayer, chairman; Howard L. Roach, Plainfield, Iowa; C. M. Gregory, Dike, Iowa; John Sand, Marcus, Iowa; and C. R. Weber, Ames, Iowa.

Convention headquarters will be at the Hotel Fort Des Moines in Des Moines, Iowa. Formal program will be held in the Hotel ballroom on Thursday and Friday, September 6 and 7. A field trip to Iowa State College, Ames, will be held on Saturday, September 8. Included in the field trip will be visits to the Iowa State College Agronomy Farm, where a large number of special plantings of soybeans are being made, and to the Swine Nutritional Research Farm, where some of the nation's outstanding swine feeding experiments using soybean oil meal are being carried on.

Hotel reservations should be made directly with the Hotel Fort Des Moines. Should the headquarters hotel be filled desirable accommodations will be available at neighboring hotels.

Exhibit space will be available to firms serving the industry, and information on this space is being mailed to all previous exhibitors.

ASA members are urged to circle the dates—September 6-7-8—on your calendars now, place hotel reservations, be ready for the annual industry-wide meetings.

Nebraska Conference

Paul C. Hughes, field service director of the American Soybean Association, was on the program of the annual soybean conference at Fremont, Nebr., Apr. 28. He took part in a roundtable discussion on growing soybeans in Nebraska.

Over two hundred and fifty farmers attended the conference which was sponsored by several Nebraska groups interested in the increased production of soybeans.

D. G. Hanway, Assistant agronomist at the Nebraska Agricultural Experiment Station recommended that Hawkeye should be grown in the northeastern section of the state and that Lincoln and Adams were equally

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MM HARVESTORS get all the crop even under weediest conditions. There's no bunching or slugging of cut beans in the rasp bar cylinder. Easy rubbing action of the rasp bars thresh out the bean *gently*. Cracked beans and chewed or torn stalks are eliminated. Cleaning shoe eliminates fine chaff and leaves clean, uncracked beans in the bin.

Exclusive MM GRAIN PAN design prevents bunching of beans at sides or ends even on rolling land. MM CLEANING SHOE is automatically levelled for best cleaning position regardless of working tilt of the HARVESTOR. UNIT-MATIC POWER can be used for hydraulically lifting, lowering and varying height of cut.

Get beans faster, easier and really clean for the lowest cost harvesting per bushel, per acre, per dollar invested. Get an MM HARVESTOR. See your MM Sales and Service Dealer or write direct.

One man can handle both Harvestor and tractor with ease. Adjustments safely made on the go to fit all field conditions.

Header and thresher built as one unit. Balanced over main axel for easier handling, light draft and positive operation at all angles.

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adapted for the rest of the state where soybeans can be successfully grown.

Illinois Repeal Carried

Illinois was about to become the 38th state to permit the manufacture and sale of yellow margarine as the Digest went to press.

Both houses of the legislature passed margarine repeal bills May 1 and 2 by top-heavy majorities. Only remaining hurdles were: elimination of the differences between House and Senate versions, and signature of the Governor, which was assured.

The bills would permit the manufacture and sale of yellow margarine and its sale in restaurants, would remove limitations on its purchase by state institutions and would prohibit the manufacture of margarine containing any foreign oil.

The Association has taken part in the repeal drive through a producer-processor committee chairmaned by Albert Dimond, Lovington, Ill.

Chemurgic Meeting

"What is Ahead in Soybean Chemurgy" was presented on the program of the National Farm Chemurgic Council in Cincinnati, Ohio, on April 19 by Geo. M. Strayer, secretary of the American Soybean Association.

The National Farm Chemurgic Council, of which Wheeler McMillen, editor of Farm Journal, is president, has been a leader in efforts to expand outlets for agricultural commodities into industrial usages. Organized in 1935, it points to increased usage of soybeans as one of the outstanding examples of chemurgic development.

David G. Wing, Mechanicsburg, Ohio, a member of the board of directors of the American Soybean Association, and R. G. Brierley, assistant vice-president of Archer-Daniels-Midland Company, were elected to membership in the board of governors of the Council at the annual business session.

More "6 Right Steps"

Over 155,000 copies of the Association leaflet, "Six Right Steps for Peak Soybean Production," have now been sent out to people requesting them! This is probably an all time record for any piece of Association literature.

Written to urge growers to go all out in soybean production in 1951 through better methods rather than more acres, the leaflet was distributed mainly by processors, county agents, and agriculture teachers.

These leaflets have been sent to 26 states and Canada. Illinois has used more than 40,000 copies of the leaflet to be the leading state with Iowa second with more than 22,000 copies.

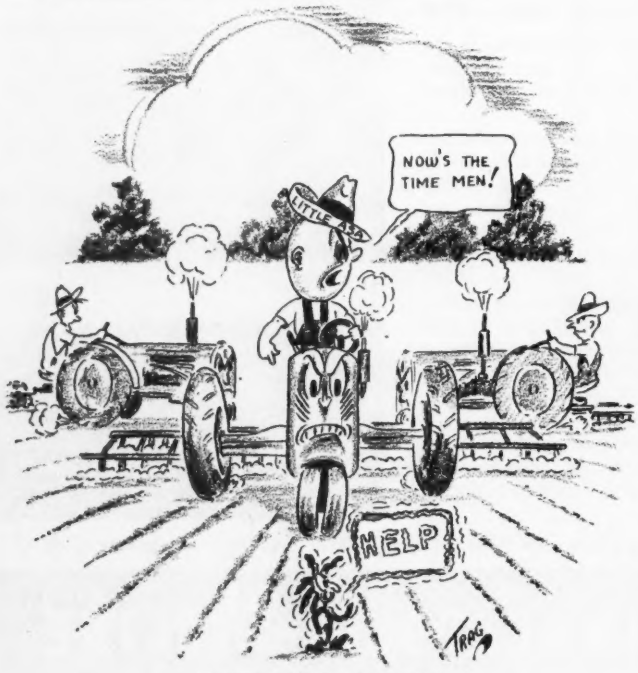
In addition to the leaflet more than 1,000 requests for showing of one or more of the films on soybean production have been received.

No Change in Grades

The U. S. Department of Agriculture has announced that no changes are being made at the present time in the official grain standards of the United States for soybeans.

Requests were made by the American Soybean Association and the National Soybean Processors Association that the Department revise the soybean standards so as to lower the maximum limits of moisture and foreign material one percent in each of the numerical grades. Informal hearings were held in January and February, 1951, at Toledo, Ohio; Chicago, Ill.; Cedar Rapids, Iowa; Decatur, Ill.; and Minneapolis, Minn. Opportunity was also provided for those who desired to do so to express their views in writing.

"After careful review of all communications, representations submitted at the hearings, and other information available to the Department, it has been decided not to amend the official grain standards for soybeans at this time," the Department stated in an Apr. 5 release.



Get Those Weeds Early!

GROWERS

Hogging Off Soybeans

Hogging-off corn and soybeans has been a most profitable farm enterprise in several sections of Louisiana the past five years, according to R. A. Wasson, extension agronomist, and A. D. Fitzgerald, associate extension animal husbandman at Louisiana State University.

There has been a rapid rise in the number who have gone into this type of farming, they say.

Ogden is the variety of soybeans recommended for hogging off in most of the state. But S-100 is recom-

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Inoculation of soybean seed becomes easy, sure and effective when you use this non-sticky humus base inoculant. It coats the seeds visibly, thoroughly and quickly—yet never gums the planting machine. And in addition, you gain both speed and economy as well.

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The famous inner lined carton package protects the potency of the nitrogen fixing bacteria and holds exactly enough inoculant to treat five bushels of soybeans. Order what you need. Open each package fresh as you treat each batch of seed. No waste, no loss, no measuring. No inoculant does more for soybeans than LEGUME AID. Tell your dealer you want it.

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mended for planting with early maturing corn in the following parishes: Tensas, Madison and Concordia, and the alluvial areas of Morehouse, Ouachita, Caldwell and Catahoula parishes.

At present prices of corn and pork, hogging-off the corn and selling it as pork just about doubles the cash corn price.

Other advantages of this type of farming, according to the authors:

1—Hogging-off greatly reduces the labor needed for a corn crop by eliminating harvesting and storage.

2—Hogging-off eliminates rat and weevil damage which often amounts to 10 percent of the crop or more, unless these pests are rigidly controlled.

3—Hogging-off corn and soybeans helps to balance the farm income between cash crops and livestock, thus adding safety and good management to the farm business.

4—Hogging-off corn and soybeans is a soil-building and not a soil-depleting process. Thus, it fits well into rotation with soil-depleting crops such as cotton or sugarcane.

5—The hogging-off process is finished early and in ample time for following with winter legumes or oats.

6—Hogging-off corn and soybeans fits extremely well into a mechanized farming program.

7—Hogging-off corn and soybeans gives finished hogs for the September market which is the month of highest average hog prices.

See Ag. Ext. Pub. 1049, Hogging-Off Corn and Soybeans, Louisiana State University, Baton Rouge, La.

Soys in New Jersey

A trend to grain crops including wheat, corn and soybeans by New Jersey farmers is reported by New Jersey Farm & Garden. That publication points out that there are less labor headaches and risks in grain production than in vegetable growing and other intensive types of agriculture practiced in New Jersey.

Yields of the Chief variety of soybeans are reported to average about 30 bushels per acre, with up to 45 bushels reported. The beans are grown both in rows and broadcast.

Some growers prefer the Hawkeye but it is said not to yield as well as some other varieties.

Newlin Pettit, Star Farms, Bridgeton, N. J., has had a good success with soybeans as a cover crop in asparagus fields. The beans are planted between the asparagus rows following the end of harvesting in July. Both the beans and asparagus brush grow quickly so weeds are seldom a problem.

Beans do not cut down asparagus yields through competition for moisture and plant food. Asparagus fields treated in this manner have consistently been tops in yield for Pettit.

As Sheep Pasture

Wilson soybeans planted about May 10 provided one of the most productive sheep pastures in the history of the Agricultural Research Center at Beltsville, Md., according to the report of the Chief of the Bureau of Animal Industry for 1950.

The total number of ewe-days of pasture per acre was 654, with a possible 100 additional ewe-days plowed under for green manure. This carrying capacity has been exceeded at Beltsville only by intermittent use of alfalfa or permanent pasture throughout the entire grazing season.

The soybean pasture was five acres in size and had a growth of 15 to 18 inches when weaned lambs were turned on it July 13. There was an average of 153 lambs on this pasture for the 28-day period ending Aug. 10, when all lambs were removed.

On Sept. 7, 84 ram lambs were placed on the pasture for a 12-day period. Their removal was caused by the fact that the bean pods had developed enough to produce some scouring in the lambs. This can be avoided by planting a type that produces fewer beans per plant, such as Mammoth Yellow.

50-Bushel Yield

Royal Oakes, Bluffs, Ill., harvested 4,000 bushels of Lincoln soybeans by actual weight from an 80-acre field last fall. Another 55-acre field of like character and adjoining this field gave practically the same yield.

Oakes planted Lincoln inoculated seed at the rate of 70 pounds per acre in 40-inch rows. After planting, the field was rolled once and cultivated three times with shovel cultivators.

No fertilizer was used, but the field was overflow bottom land on which a crop of wheat was lost in 1948 and a reduced corn yield was experienced in 1949 due to continued wet weather.

—s b d—

THE COVER PICTURE

The farmer on the cover wanted the biggest yield he could get so he is doing a good job of controlling the weeds.

You can bet our cover farmer didn't wait until his soybeans were high enough to cultivate before killing weeds.

He plowed his field early, and prepared a loose seedbed, then after the land had become warm and the first weed crop germinated he prepared a firm seedbed and planted in rows so he could cultivate. Then as soon as his soybeans were t h r o u g h the ground, while the weeds were still in the white, he killed the weeds with a rotary hoe—or maybe it was a harrow or weeder—going crosswise of the row.

He repeated the operation just as soon as the weeds started again. Now he is keeping them down with his cultivator.

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Grim times these are, for a young couple facing a new life together on a farm or elsewhere. But they do so knowing we here in America have a secret weapon that Iosif Vissarionovich Dzugashvili, alias Joseph Stalin, can never copy.

We have a grow-ahead system in this country. It has stimulated the inventor, the manufacturer, the laborer to do a better job, because a better job pays more. A man is free to grow here, to watch his farm grow, to push his business into greater growth or to increase his skill as a worker or a manager.

Our system pulls people ahead. We do not stimulate them with a shotgun in their faces. We needn't threaten banishment to Siberia or to a labor concentration camp to make our factory wheels hum.

Back of any part-war or full-war effort is the great "know-how" of our industry. The only nation Iosif fears is the leading grow-ahead nation in the world. When Dzugashvili says he fears our industrial system he says, in effect, that he fears our free minds and our incentive way of doing things. Let's never copy Communism, or any other "ism." Let's copy our own success, which has made our nation the envy of all the world.

* * *

Here at Cargill we have an incentive to serve you. Under our American system we must *earn* your grain business by constantly trying to do better and better. To merit your feed and seed business, we can't depend on some political overlord. We have to give you better feed and seed—and better service, too. We have to do that every day, night and day.

Knowing all this, we try harder and harder, all the time.

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This Advertisement also appears in The Farmer, Wallace's Farmer, The Dakota Farmer and 11 other publications.

The Economic Picture

THE SOYBEAN FARMER FACES

By S. A. ENGENE

Division of Agricultural Economics, University of Minnesota. Before Tri-State Soybean Processors' Conference, Minneapolis, Mar. 9.

ONE OUTSTANDING characteristic of the economic picture facing the soybean farmer is uncertainty. The decisions that will help to clarify the situation will be made in the political or military area, and are hard to predict. We can, however, evaluate the economic consequence of different courses of action.

The first important uncertainty is the future of international relations. Will we have real peace, a hot war, or a continuation of circumstances calling for military preparedness?

Real peace is, unfortunately, the dimmest prospect. If we should have the good luck of getting real peace, the outlook picture of a year ago will probably again be reasonable.

A hot war is probably more likely than real peace. We will then go back to a situation comparable to 1943-45—high demands for farm products, price ceilings, rationing, scarcities of labor and materials needed for production. The emphasis would be on maximum production and ways to overcome our handicaps. It is probable, however, that with the present situation as a starting point, costs might rise more rapidly than farmers' income.

Preparation for defense with a military preparedness program extending over a long period is probably the most likely prospect. This means large armed forces, drawing people away from their customary jobs. It means building and equipping of factories and manufacture of supplies for the military forces, drawing workers and materials away from production of goods for civilians. After the factories have been built and stockpiles of finished military supplies have been accumulated, a considerable part of the labor and flow of raw materials can be diverted back to civilian goods.

S. A. ENGENE

Employment will increase, although not greatly—we do not have enough unemployment for a big change. Hours worked per worker will probably increase, with overtime pay for part of the increase. Rates of pay will most likely increase. This will increase demand for goods. With a gradual decline in manufactured goods, consumers' demands will shift toward farm products. Demand for farm products will increase—we have already seen the effect of this in the rise in farm prices. It seems unlikely that the increase in demand will be as great as it was during World War II. When our defense program has advanced far enough to permit a shift back toward normal production, the demand for farm products probably will weaken. With demands accompanying continued preparedness and increased population, demand will still be quite high, however.

Demand will be greater for some products, as wool or beef, than for others, but the increase in demand will cover most farm products, so that no great shift in types of farming is needed.

Costs

Farm costs will continue to rise. Some machinery and supplies will become short. We will need to conserve what we have. Labor will be short on many farms.

Incomes will be sufficiently good so that it will be profitable to farmers to organize their farms well and to continue a high level of production. With rising costs, possibilities of shortages, and a possible recession in demand in a few years it will be important to stress efficiency in production. We must strive to handle our resources in such a way as to enable us to continue high levels of production for a long period.

Inflation

The second important uncertainty is the probable extent of our inflation. Price levels are rising. We have generous amounts of fuel to feed that inflation—high levels of employment, high prices for wages and raw materials, liberal terms for credit, and lack of confidence in the future. Many people ask, shall I buy land or machinery now to beat the price rise, or shall I wait? Buying to beat the price rise is not an effective way to put limited resources in the hands of the producer who can use it most efficiently. Inflation makes it harder for the farmer to make wise decisions.

Inflation is also important to the farmer because it affects the society in which he lives. It makes our defense efforts cost more. It reduces the value of such savings as cash in the bank, insurance, and bonds. In that sense it is a tax upon the thrifty.

Inflation can be controlled or limited—by attacking the causes of inflation. That will require (a) paying for our defense by taxation, and by taxation that helps to absorb spending power; (b) absorbing spending power by investment of funds in bonds; and (c) limitations on credit.

—s b d—

LONG-TIME STORAGE

To measure changes in the quality of soybeans during storage, one bin was kept for four years at the University of Illinois.

Moisture content of the beans—which were No. 1 yellow—at the start was very low, 8.2 percent. By the end of the period they had gained only 1.3 percent in moisture.

Total damage and proportion of split soybeans increased only slightly. Market grade remained the same.

The only significant change during storage was that germination decreased from 94 percent to 23 percent.

The same favorable results from long-time storage could not be expected with soybeans having a higher moisture content—say 12 percent or higher.

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SEED TREATMENT

Are seed treatment people "stand conscious"? Yield is what counts.

YOU WILL FIND an article on inoculation of soybean seed, and also one on seed treatment, in this issue, on the pages following.

The question of whether you can inoculate and treat the same seed *and make both effective* is far from settled.

Is seed treatment always toxic to nodule bacteria? If so, which is more important under a given condition, treatment or inoculation?

The Digest put these questions to a number of USDA and state experiment station agronomists and pathologists, as well as to manufacturers of inoculants and seed protectants.

Answers show a divergence of opinion, as was to be expected. But there was fair agreement on the following points:

1—There is no reason to use a seed protectant on sound, disease-free seed that will germinate over 85 percent and that is to be planted in warm soil. It may be desirable on seed that does not meet all of these qualifications.

2—Seed protectants are always somewhat toxic to nitrogen-fixing bacteria but do not necessarily cut down on root nodulation, especially in soils where the bacteria are plentiful.

3—You can use both inoculation and seed treatment and get at least partial benefit from the inoculant, if done properly.

There are two points of view on the question of inoculation and seed treatment, with northern experiment stations tending to stress inoculation, and southern stations placing more emphasis on seed treatment, at least where the nodule bacteria are well established in the soil.

As you go south it becomes more difficult to obtain sound, viable seed, and there is the feeling that seed treatment is cheap insurance of good stands.

Northern View

Northern agronomists point out that though seed treatment always produces better stands it does not always increase yields. They comment that people who recommend seed treatment are often "stand conscious" rather than yield conscious.

Some contend that in many soils a thinner stand with effective inoculation would produce more beans than a perfect stand without inoculation. They tend to favor planting more seed rather than treating if germination is low.

Illinois Circular 676 (in cooperation with the U. S. Department of Agriculture), "Soybean Diseases in Illinois," by Donald Chamberlain and Benjamin Koehler, has this to say about seed treatment:

"Trials have usually shown that with seed of good quality planted at the ordinary rate in Illinois no significant increase in yield can be expected as a result of seed treatment.

"Under certain conditions, however, seed treatment may have a definite place. If, for example, the quality of the seed is poor and it is consequently low in germination, seed treatment to increase stands would be worth while. Likewise, if seed supplies were short and planting rates were reduced to one-half bushel an acre or less to stretch the supply, it is likely that seed treatment would be beneficial.

"Soybeans can vary considerably in stand without showing a difference in yield. For example, increasing the best planting rate 25 or even 50 percent does not increase the yield. Under these conditions the expense and labor involved in seed treatment does not seem justified."

Says O. H. Sears, professor of soil biology at the University of Illinois: "All of the seed treatments recommended for soybeans have not been tested by us. Those tested had a harmful effect upon nodulation where suitable nodule bacteria were not present in the soil *and where any considerable time elapsed between inoculation and seeding.* (italics ours). If the seed were sown at once after inoculation, good nodulation was secured but not in the soil area immediately surrounding the seed.

"If an abundance of soybean nodule bacteria are present in the soil without inoculation and if distinctly better stands are secured, seed treatment might be advisable."

One northerner, however, is much less reserved in recommending seed treatment. M. F. Kernkamp, associate professor in the division of plant pathology and botany in the University of Minnesota, says seed should always be treated in Minnesota if germination is lower than 85 percent.

"My field tests for two years proved to my satisfaction that seed treatment did not interfere with nodulation *when the seed was planted in the field under natural conditions*" (italics ours), says Kernkamp. "Yields were in no way affected indicating again that seed treatment did not interfere with nodulation . . . I look on seed treatment as a very cheap form of insurance that may save an entire planting under certain circumstances."

Kernkamp emphasizes that his results do not apply to all soybean states, but only to Minnesota.

Southern Views

As you go south opinion swings in favor of seed treatment. Agronomists say there is no evidence that when treated seed is planted in ground containing the root nodule bacteria, treatment has any harmful effect on nodulation. Soybean plants from treated seed are just as well nodulated as those from non-treated seed.

Says S. G. Lehman, professor of plant pathology at the University of

and INOCULATION

Are They Compatible? When Should You Treat? When Inoculate? The Views of Experts.

North Carolina: "In a recent experiment with two materials now quite commonly recommended for seed treatment of soybeans, an application of two ounces per bushel of beans reduced nodulation approximately 50 percent. However, when one ounce of the chemicals per bushel of seed was used, as good or better nodulation was obtained as on plants from inoculated seed which had not been treated with any chemical. This observation was made on recently cleared land which had never grown any crop before. The inoculant had been applied immediately before planting the seed.

"If the inoculant is applied immediately before planting, and a moderate dosage of the chemical has been used the activity of the seed-borne inoculant is ordinarily not greatly reduced, if reduced at all.

"It is safe to treat seed when planting is being made on land which grew soybeans within the past five or six years."

Soybean seed should not be treated if it is to be planted in ground that has not previously produced a crop of soybeans. This is emphasized by a southern pathologist.

If you use a seed protectant, how can you keep its harmful effects on legume bacteria to a minimum?

The following steps are suggested by Joe C. Burton, director of research for the Nitragin Co., Inc.:

"1—Select the seed protectant which is least toxic to the bacteria and which will at the same time provide the needed protection for the seed.

"2—Use two to three times the needed amount of inoculant.

"3—Inoculate seed immediately before planting.

"4—Never plant inoculated chemically treated seed in soils with insufficient moisture for germination of seed.

"5—When using a seed protectant which is very toxic to the nodule bacteria, inoculation can be effected by mixing the inoculant with some material such as basic-slag, ground limestone, cottonseed meal or even screened soil, drilling through the fertilizer attachment on the drill provided you are not adding fertilizer. Two of the two-bushel size cans of inoculant mixed with 100 pounds of bulking material can be applied per acre."

It is easy to see that this is a subject that needs to be explored further. Says Burton, "What we really need is a coordinated research program on this subject carried on jointly by the inoculant and the chemical seed protectant industries."

Such a program should help find more convincing answers to the questions about when inoculation and seed treatments are needed and how to get maximum benefit from both.

Importance of Inoculation[1]

By O. H. SEARS and D. L. LYNCH[2]

The main purpose in inoculation of soybeans, as with all leguminous crops, is to increase the yield and the profits to farmers. A second reason is to enable the crop to secure a portion of its nitrogen supply from the air. Thus the soybean may, under suitable conditions, add to the soil supply of nitrogen. A third value from inoculation with efficient bacteria, when accompanied by nodule formation, is to modify the protein and oil content of both the hay and seed.

The objectives of the experiments reported here were twofold:

1.—To determine how much nodule bacteria contribute to the yield of the soybean crop.

2.—To ascertain what proportion of the nitrogen in nodulated soybeans is secured from the air.

[1] Presented at the Third Annual Tri-State Soybean Conference of Processors and Agronomists, Urbana, Ill. March 21-22.

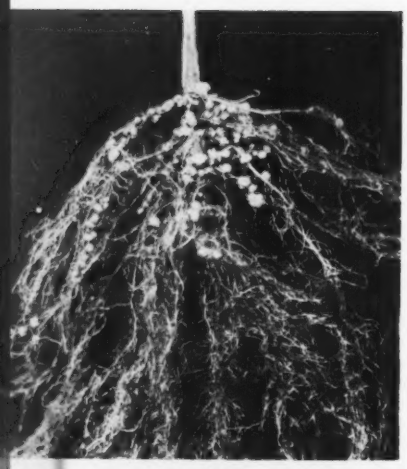
[2] Professor and first assistant respectively soil biology, department of agronomy, University of Illinois.

Effects of Nodulation

Previous investigations showed that inoculation (with nodulation) increased the yield, where the nodule bacteria were not present already, from a few percent up to 300 percent, or more depending upon the nitrogen fertility of the soil. While these investigations indicated the importance of inoculation they did not show conclusively how much the nodule bacteria contributed to the soybean yield, because, *under field conditions,* even uninoculated beans bear some nodules. It was only recently that a new tool was found that made it possible to evaluate more accurately the efficiency of nitrogen fixation by the soybean nodule bacteria and their host plant. We are indebted to Dr. L. F. Williams of the United States Regional Soybean Laboratory located at Urbana, Ill., for this tool.

In his breeding studies Doctor Williams selected two sister strains from a cross between Lincoln x (Lincoln x Richland). One of these selections, designated here as high protein selection, is abundantly nodulated under favorable conditions, whereas the other, designated low protein selection, is completely void of nodules under the same conditions. When supplied with a source of available soil nitrogen these selections have equal yielding ability and are similar in all respects other than that of susceptibility to infection by nodule bacteria. Thus through the use of these two selections it was possible to secure exact information on the benefits derived from association of the soybean nodule bacteria with the host plant.

DR. O. H. SEARS



Well nodulated soybean root.

Method of Study

The two selections were inoculated with the same strain of nodule bacteria and then seeded in alternate rows on five blocks of soil which differed mainly in their nitrogen fertility level. (They had all been limed and phosphated and, by soil test, were well supplied with potassium.)

The differences in nitrogen-supplying power were shown by the differences in color of the beans as well as by the yields of the low protein (non-nodulated) selection.

The treatments on these soils which produced differences in the nitrogen fertility level are given in Table 1.

Table 1. Soil treatment practices

Block	Previous treatment	Additional treatment
I	Birdsfoot trefoil green manure crop	NH_4NO_3 300 lb. per acre
II	Same as Block I	None
III	Grass sod fertilized with $(NH_4)_2SO_4$	None
IV	Grass sod—no nitrogen fertilizer	None
V	Same as Block IV	5-ton oat straw mulch

The NH_4NO_3 was applied in order to be sure that nitrogen was not a limiting factor in the growth of the low protein selection. It was necessary to establish the fact that, if given sufficient available nitrogen, the two selections had the same yielding ability.

The straw mulch was used in order to lower the available nitrogen supply in Block V. Previous experiments had shown that soluble organic matter of the straw is leached into the soil during rains and that this soluble organic matter stimulates nitrate-assimilating micro-organisms which decrease the supply of available nitrogen. Nearly two inches of rain fell on these plots shortly after mulching.

When the beans started to develop yellow leaves about the middle of September some of the beans, including the roots, were harvested for chemical analyses. Others were permitted to ripen and were harvested for seed.

Results

The yields of the two soybean selections are given in Table 2.

Table 2. Yields of soybeans on soils of different nitrogen fertility levels

Block	Soybean selection High protein	Soybean selection Low protein	Gain for nodule bacteria
	bu./A	bu./A	bu./A
I	38.6	38.3	0.3
II	36.2	33.0	3.2
III	36.6	33.1	3.5
IV	36.0	29.2	6.8
V	35.5	20.9	14.6

In inspecting these data it should be remembered that even though both selections were inoculated the low protein strain bore no nodules whereas the high protein strain was nodulated and that as the nitrogen fertility level of the soil decreased the extent of nodulation increased.

The consistency of the yields of the nodulated selection is apparent and suggests that under the conditions of this experiment the bacteria were able to take care of the nitrogen needs of the crop. A comparison of the yields on Block I where nitrogen fertilizer, in addition to a leguminous green manure, was used indicates that the two selections have equal yielding ability where available nitrogen is present.

An inspection of the column giving the gains for the nodule bacteria indicates that as the nitrogen fertility of soil declines the value of the bacteria increases. Thus the greatest benefit is derived on soils with low nitrogen-supplying power provided other plant nutrients are present. Also, it may be concluded that the use of nitrogen fertilizers may cancel the effect of nodulation. From a monetary standpoint, however, few farmers would desire to substitute nitrogen fertilizers for nodulation.

It should be kept in mind that an evaluation of inoculation is not implied in these data. They show only the value of the nodule bacteria. The importance of inoculation depends not only on the nitrogen fertility of the soil, but also on the presence of efficient bacteria in the soil.

Of even greater importance is the information obtained in this experiment on the proportion of nitrogen in the crop which is taken from the air. These data give an insight into the contribution to soil nitrogen balances which soybeans make under field conditions.

Present-day textbooks on soils and on crops state that two-thirds of the nitrogen of nodulated leguminous crops is secured from the air and one-third from the soil. This statement originated with Dr. C. G. Hopkins in 1902 in Illinois Bulletin 76 and has been repeated often. He arrived at this value by harvesting the tops of alfalfa and determining the nitrogen content of inoculated and uninoculated plants. The data were secured under both field and greenhouse conditions. It was not recognized then that even uninoculated plants bear some nodules and thus fix some nitrogen. Since that time many investigators have studied the amount of nitrogen fixed by nodulated leguminous crops with widely varying results.

The unique part of this experiment is the comparison of an unnodulated leguminous crop with a similar nodulated selection under field conditions. The data for nitrogen fixation are presented in Table 3.

Table 3. Nitrogen fixation by soybean nodule bacteria in association with the host plant

Block	Total nitrogen high protein sel.	Total nitrogen low protein sel.	Nitrogen from air
	lb./A	lb./A	peret.
III	199	158	21
IV	192	102	47
V	177	65	63

These results show that the proportion of nitrogen secured from the air by nodulated soybeans varies with soil conditions. On land low in available nitrogen, provided other available nutrients are present, about two-thirds of the nitrogen is air-derived. On the other hand, where available nitrogen is plentiful only a small percentage of nitrogen is drawn from the air. Thus the soybean crop is capable of expressing its full hereditary possibilities even in soils low in nitrogen if it is nodulated by efficient nodule organisms and other limiting factors are removed.

Under what conditions may one expect soybeans to secure a large proportion of their nitrogen from the air? While it is impossible to pin point the answer a comparison of the amount of nitrogen secured from the soil by the non-nodulated beans with the amount in a corresponding corn crop may be of interest. This comparison is given in Table 4.

Table 4. Soil nitrogen removed by low protein selection and estimated corn crop which soil would produce

Block	Nitrogen removed by low protein sel.	Estimated corn yield
	lb./A	bu./A
III	158	105
IV	102	68
V	65	43

This estimate, and it is an estimate only, assumes that 1.5 pounds of available soil nitrogen will be sufficient for the production of a bushel of corn and that the corn crop can secure the same amount of nitrogen from the soil as the non-nodulated soybean crop. If this assumption is reasonably accurate one can conclude that on land having a nitrogen fertility level of about 40 bushels of corn an acre nearly two-thirds of the nitrogen requirement of soybeans will be obtained from the air. On land having a nitrogen fertility level sufficient for 100 bushels of corn only one-fifth of the nitrogen in the nodulated soybean crop will be air derived.

It is not unreasonable to project these values in estimating the effectiveness of other legumes and their associated nodule bacteria in nitrogen fixation. These data suggest that the amount of nitrogen taken from the air is dependent upon the available nitrogen-supplying power of the soil as well as upon the kinds of legume, the method of use and the nitrogen-fixing efficiency of the particular nodule bacteria.

Thus it would appear that natural processes set a ceiling on nitrogen accumulation for each environment and that as the nitrogen content of the soil approaches this ceiling addition of nitrogen to the soil by nodulated legumes becomes more difficult.

Soybean Seed Treatment

By HOWARD W. JOHNSON[1]

Senior Pathologist, Division of Forage Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture.

Most soybean diseases are caused by fungi or bacteria that live from one crop year to the next in one or more of the following ways:

1—On or in the seeds,
2—In the crop refuse, or
3—In the soil.

It is evident from these facts that seed treatment, complete plowing under of crop residues, and crop rotation should be considered as soybean disease control measures; together with the development of plant breeding methods of new, productive varieties that are resistant to one or more of the major soybean diseases. This paper discusses some aspects of seed treatment as a control measure for seed decay and damping off of soybeans.

Soybean seed treatment tests have been conducted by state and federal plant pathologists sporadically during the past 25 years and have shown, in general, that treating soybean seed with a suitable chemical disinfectant before planting will increase the percentage of emergence of seedlings over that obtained from non-treated seed. In most cases, these increases have been sufficient in amount to have statistical significance. *However, there have been very few reports showing that an increased yield of soybeans was correlated with the increased stand obtained by seed treatment.*

This failure to increase yields has usually been explained by assuming that at a seeding rate of one bushel or more per acre, the loss of 10 to 15 percent of the potential stand due to seed decay and damping off is of no practical significance. In other words, lessened competition for moisture and nutrients is assumed to permit the remaining plants to yield more than they would have, provided a complete stand had been obtained from the seed sown. In this way, the surviving plants are able to compensate for the missing plants, so that the per acre yields are much the same.

With this situation facing them, plant pathologists have been reluctant to recommend seed treatment for soybeans on a nation-wide scale. In some states, mostly in the southern production areas, seed treatment has been recommended on the basis that a small annual insurance payment is better than a major expenditure for replanting in those occasional years when poor quality seed and a cold, wet spring combine to result in stands from non-treated seed that are too poor to retain. This philosophy appears to have some merit.

In the Yazoo-Mississippi Delta area, most soybean growers are primarily producers of cotton. Seed of the latter crop is usually treated with a fungicide before planting and in carrying over their experience with cotton-growing into soybean production, the growers have been inclined to consider seed treatment as a desirable, if not absolutely necessary, production practice. Seed treatment tests with soybeans conducted at the Delta Branch Experiment Station, Stoneville, Miss., during the past four years indicate that seed treatment is a sound practice in the Delta area.

Tests at Stoneville

The tests at Stoneville involved several seed treatment chemicals and several varieties or strains of soybeans each year. Each test was planted in the field as a randomized, split-plot arrangement with varieties as the main plots and treatments as the sub plots. One hundred seeds were planted per 10-foot row, thus approximating a seeding rate of one bushel per acre. Emergence counts were made approximately two or three weeks after seeding. Yields were determined at maturity. Replications ranged from three to six and the data obtained on emergence and yield were subjected to the analysis of variance.

After emergence counts were made in the spring of 1950, the 16 soybean varieties in the test were divided into two groups. Group A was made up of the eight varieties having stands of less than 70 percent from non-treated seed, while Group B was composed of the eight varieties having stands of more than 70 percent. The data from these two groups of varieties were tabulated and analyzed separately to determine the effect of seed treatment on poorer and better germinating seeds.

The emergence data for the four years are summarized in Table 1, next page.

To insure nodulation, inoculate treated soybean seed just before planting.

[1]Cooperative investigations on soybean diseases are conducted by the author at Stoneville, Mississippi, through a cooperative arrangement between the Division of Forage Crops and Diseases, B.P.I.S. and A.E., Agric. Research Admin., U. S. Dept. of Agric., and the Mississippi Agric. Exper. Station. Journal article No. 244, Miss. Agric. Exper. Sta. Presented as a paper at the Forty-second Annual Meeting of the American Phytopathological Society, Memphis, Tennessee, December 1, 2, and 3, 1950

They show that in each year, the Arasan and Spergon treatments at the rate of two ounces per bushel resulted in increases in emergence over the non-treated seed that were highly significant statistically. In the two years that Arasan slurry was tested, it gave results quite comparable to Arasan dust. Spergon slurry was not tested, but it seems reasonable to assume that results with it would have been comparable to those with Spergon dust, since it contains the same active ingredient.

The Ceresan dusts (mercurials) also resulted in significantly greater emergence in all tests in which they were included. On the other hand, Phygon and Dow 9B resulted in significant increases in emergence in only one year out of three. Phygon wettable and Yellow Cuprocide were tested one and two years, respectively. Results with these materials were negative. Vancide 51, a liquid treatment, was tried for the first time in 1950. Results with it were comparable to those obtained with Arasan and Spergon.

It is interesting to note that in the 1950 test, treatment of the seed of the eight poorer germinating varieties (Group A) resulted in increases in emergence of 17, 21 and 18 percent, respectively, for three treatments, whereas treatment of the seed of the eight better germinating varieties (Group B) resulted in increases of only 10, 11 and 9 percent, respectively. These results show that poorer germinating soybean seed is benefited more by seed treatment than is better quality seed of higher germinability.

The analyses of variance for the emergence data are summarized in Table 2. Examination of this table reveals that the mean squares for varieties were highly significant in each year. This was to be expected since certain varieties were selected each year because of known or suspected poor germination. Mean squares of treatments also were highly significant in each year, showing that the tests were suitable to measure differences due to treatment. Mean squares for interaction (varieties x treatments) were highly significant in all tests except the 1950 one involving the eight better germinating varieties. Since interaction was significant, this mean square was used in each case in calculating the least significant differences presented at the bottom of Table 1.

Yields were not determined in 1947, but such data for the years 1948 to 1950, inclusive, are summarized in Table 3. The data presented

Table 1. Effect of various seed treatments on emergence of soybean seedlings at Stoneville, Mississippi, from 1947 to 1950

TREATMENT	Rate (Oz. per bu.)	AVERAGE EMERGENCE FOR ALL VARIETIES (Percent) 1947	1948	1949	1950 Group A	1950 Group B
Arasan	2	67**	65**	63**	68**	89**
Arasan SF	1½	66**		62**	—	—
2% Ceresan	2	62*	63**	56**	—	—
New Improved Ceresan	1†	68**	62**	63**	—	—
Ceresan M	½		62**	55**	—	—
Spergon	2	66**	63**	66**	72**	90**
Phygon	2‡	44	58	52**	—	—
Phygon Wettable	4	51			—	—
Yellow Cuprocide	2		59	46	—	—
Dow 9B	2§	60	61**	44	—	—
Vancide 51	136 cc.¶				69**	88**
Non-treated		56	54	40	51	79
No. of Varieties in Test		6	8	4	8	8
L.S.D. (odds 19 to 1)††		5.6	5.3	7.9	4.4	2.4
L.S.D. (odds 99 to 1)††		7.5	7.0	10.4	5.9	3.2

† Reduced to ½ oz. per bushel after 1947.
‡ Reduced to 1 oz. per bushel after 1947.
§ Increased to 3 oz. per bushel after 1947.
¶ A liquid treatment applied at the rate of 0.5 per cent by weight of seed.
†† Calculated from interaction (Var. x Tr.) mean square.
* Significant at odds of 19:1.
** Significant at odds of 99:1.

Table 2. Analyses of variance of emergence data from soybean seed treatment tests conducted at Stoneville, Mississippi, 1947-1950

	1947 D.F.	1947 Mean Square	1948 D.F.	1948 Mean Square	1949 D.F.	1949 Mean Square	1950 D.F.	1950 Group A Mean Sq.	1950 Group B Mean Sq.
Blocks	3	42.33	2	332.00	5	352.00	4	269.00	75.75
Varieties	5	18,392.40**	7	6,570.86**	3	5,723.67**	7	1,246.00**	244.36*
Error (a)	15	344.47	14	149.95	15	91.00	28	87.61	38.53
Treatments	8	165.09**	8	277.00**	9	1,966.00**	3	3,505.00**	912.33**
Var. x Tr.	40	98.35**	56	85.57**	27	192.78**	21	83.76**	30.24
Error (b)	144	49.40	128	48.11	180	11.30	96	35.92	26.63

* Significant at odds of 19 to 1.
** Significant at odds of 99 to 1.

in Table 3 show that no significant differences in yield due to treatment were obtained in 1948, nor with the eight better germinating varieties (Group B) in 1950. In the 1949 test, six treatments resulted in yields that exceeded the non-treated check but only in the case of Arasan was the increase in yield sufficient (4.5 bushels per acre) for statistical significance. This increase in yield due to Arasan treatment was associated with a stand increase of 23 percent, as shown in Table 1. In the case of the eight poorer germinating varieties (Group A) in 1950, increases in yield were 1.3 bushels per acre with Arasan, 2.4 bushels with Vancide 51, and 3.1 bushels with Spergon. The latter two increases in yield were significant statistically and were associated with stand increases of 18 and 21 percent, respectively, as shown in Table 1. The yield data for Groups A and B in 1950 provide further evidence of the greater benefits to be derived from treating poorer quality seed as compared with better quality seed.

The analysis of variance for the yield data are summarized in Table 4. The mean squares for varieties were highly significant in each year as in the case of the emergence data and presumably for the same reason. Mean squares for treatments were non-significant in 1948 and in the 1950 test involving the eight better germinating varieties. In the 1949 test and the 1950 test involving the eight poorer germinating varieties, mean squares for treatments were highly significant. Mean squares for interaction (varieties x treatments) were significant in the latter two tests, but were non-significant in the 1948 test and the Group B test in 1950. The interaction mean squares were used in calculating the least significant differences presented at the bottom of Table 3.

Storage Tests

Storage of soybean seed from harvest in the fall to planting time the next spring is probably more of a problem in the Delta area than in the more northern producing areas, due to the occurrence of warm, humid weather at times during the winter and early spring. Since loss of viability appears to be due in part to microbiological activity, it appeared that treating the seed with a chemical disinfectant in the fall might aid in preserving the germinability of the seed during the storage period.

A test of this type was set up in the fall of 1947 involving the varieties S-100, Ogden, and Volstate, which mature approximately Sept. 20, Oct. 10, and Oct. 25, respectively, in the Delta area. The treatments used were Arasan and Spergon at two ounces per bushel, New Improved Seresan at one ounce per bushel and a non-treated check. The seed was treated immediately after harvest and was stored in cloth bags in a seed house where it was subjected to fluctuating conditions of

Table 3. Effect of various seed treatments on yield of soybeans at Stoneville, Mississippi, from 1948 to 1950

TREATMENT	Rate (Oz. per bu.)	AVERAGE YIELD FOR ALL VARIETIES (BUSHELS PER ACRE) 1948	1949	1950 Group A	1950 Group B
Arasan	2	32.2	38.3*	42.5	44.2
Arasan SF	1½		36.9	—	—
2% Ceresan	2	32.5	36.5	—	—
New Improved Ceresan	½	30.2	37.5	—	—
Ceresan M	½	32.9	34.8	—	—
Spergon	2	32.3	37.9	44.3*	44.6
Phygon	1	31.3	32.7	—	—
Yellow Cuprocide	2	33.1	33.7	—	—
Dow 9B	3	31.9	33.2	—	—
Vancide 51	136 cc†			43.6*	45.3
Non-treated	—	31.3	33.8	41.2	45.5
No. of Varieties in Test	—	8	4	8	8
L.S.D. (odds 19 to 1)‡	—	N.S.	4.5	2.4	N.S.

† A liquid treatment applied at rate of 0.5 per cent by weight of seed.
‡ Calculated from interaction (Var. x Tr.) mean square.
* Significant at odds of 19 to 1.

Table 4. Analyses of variance of yield data from soybean seed treatment tests conducted at Stoneville, Mississippi, 1947-1950

	1948 D.F.	1948 Mean Square	1949 D.F.	1949 Mean Square	1950 D.F.	1950 Group A Mean Square	1950 Group B Mean Square
Blocks	2	17,804	5	141,926	4	45,431	68,795
Varieties	7	159,089**	3	622,380**	7	95,047**	781,208**
Error (a)	14	13,184	15	83,972	28	24,504	19,792
Treatments	8	5,862	9	46,113**	3	31,563**	6,308
Var. x Tr.	56	6,922	27	26,667*	21	13,214*	9,763
Error (b)	128	4,887	180	14,560	96	7,821	19,139

* Significant at odds of 19 to 1.
** Significant at odds of 99 to 1.

temperature and humidity until planted in the field on May 5, 1948.

The average stands for the three varieties were 62 percent for the Arasan treated seed, 60 percent for the Spergon treated seed, 55 percent for the New Improved Ceresan treated seed, and 51 percent for the non-treated seed. The analysis of variance showed that a difference of 6.1 percent was needed for significance at odds of 19 to 1 and a difference of 8.2 percent was needed for significance at odds of 99 to 1. The stand improvements obtained with the Arasan and Spergon treatments were highly significant, therefore, while that obtained with the New Improved Ceresan treatment was not significant. The latter is a volatile, mercurial compound and would not be expected to give as good results in this type of test as the former two compounds which are non-volatile.

In another test bearing on this problem, four lots of soybean seed (D523-30, S-100, Mississippi-grown Ogden, and North Carolina-grown Ogden) were treated in April 1949 and stored in cloth bags under uniform conditions until planted in the field on May 12, 1950. The treatments were the same as in the test discussed above. The average stands obtained in 1950 from the four seed lots treated in 1949 were 55 percent for the Arasan treated seed, 53 percent for the Spergon treated seed, 46 percent for the New Improved Ceresan treated seed, and 27 percent for the non-treated seed. The analysis of variance showed that a difference of 9.3 percent was needed for significance at odds of 19 to 1 and a difference of 12.5 percent was needed for significance at odds of 99 to 1. The stand improvement due to each of the three treatments was highly significant, therefore.

It would appear from the results of these two tests involving storage of treated seed, that treating soybean seed with either Arasan or Spergon at the rate of two ounces per bushel in the fall should aid in maintaining the germinability of the seed during the storage period. Mercurial dusts, however, should not be used in this way.

Seed Treatment and Inoculation

Tests of the compatibility of seed treating chemicals and bacterial inoculants have not been conducted at Stoneville, since in inoculation tests at this location, the roots of the plants from non-inoculated seed have always been as well nodulated as those from inoculated seed. This is due apparently to the fact that soybeans have been grown for many years on the station land and the root-nodule bacteria have become distributed throughout the soil. Under such conditions, the plants from fungicide-treated seeds are invariably well nodulated and seed treatment is certainly no deterrent to good root nodulation and growth. Similar observations have been reported by other workers, and *it seems reasonable to conclude that seed treatment will have no serious effects on nodulation in soils which have grown nodulated soybeans previously.*

In the writer's judgment, critical tests of compatibility can be conducted only at field locations where nodules do not develop on the roots of the plants from non-inoculated seed. In the tests reported by Allington et. al[2] in 1945, Auburn, Ala., was such a location. They report that at this station the efficiency of inoculation was slightly impaired by

[2]Allington, W. B., et. al. Results of the uniform soybean seed treatment tests in 1944. Plant Disease Reporter, Supplement 159, October 15, 1945.

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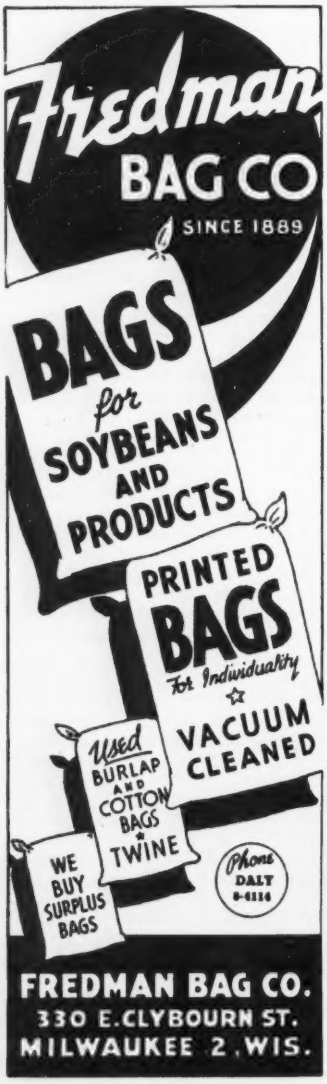
the seed treatments, resulting in a significant treatment x inoculation interaction. *According to their observations, mercury compounds were most harmful to the bacterial inoculant.* Inoculation of the seed resulted in large increases in yield in this test at Auburn. Since inoculation is indispensable when soybeans are planted on land not containing the root-nodule bacteria, seed treatment probably should not be recommended for the first soybean crop.

Should a grower desire to both treat and inoculate the soybean seed before planting, the procedure should be in that order. Treating can be done at any time before planting, even in the preceding fall at harvest time, as shown in the storage tests reported above. Inoculating should be done just prior to planting, whether the seed is treated or non-treated.



Summary

Treating soybean seed with Arasan and Spergon at the rate of two ounces per bushel resulted in increases in emergence over the non-treated seed that were highly significant statistically in each of four years. The slurry method of seed treating was tested for two years, using Arasan SF, and it was shown that this method of treating is satisfactory for soybeans. The Ceresan dusts (mercurials) also resulted in significantly better emergence when applied to the seed before planting in the spring. Phygon and Dow 9B resulted in significant increases in emergence in only one year out of three. Results with Phygon wettable and yellow cuprocide were negative. Vancide 51, tested only in 1950, resulted in increases in emergence that were comparable to those obtained with Arasan and Spergon. Evidence is presented showing that the emergence of poorer germinating soybean seed is improved more by seed treatment than is the emergence of better germinating seed.

In 1949, six treatments resulted in yields that exceeded the non-treated check, but only the Arasan treatment increased yields sufficiently (4.5 bushels per acre) for statistical significance. This increase in yield was associated with a stand increase of 23 percent.

In 1950, increases in yield for the eight poorer germinating varieties averaged 1.3 bushels per acre with Arasan, 2.4 bushels with Vancide 51, and 3.1 bushels with Spergon. The increases due to treatment with Vancide 51 and Spergon were significant statistically and were associated with stand increases of 18 and 21 percent, respectively. Yield increases were not obtained by treating the seed of the eight better germinating varieties in 1950. These yield data provide further evidence of the greater benefits to be derived from treating poorer quality seed as compared with better quality seed.

The results of two tests involving storage periods of approximately six months and one year, respectively, after seed treatments were applied, show that treating soybean seed with either Arasan or Spergon at the rate of two ounces per bushel will aid in maintaining the germinability of the seed during the storage period. Mercurial dusts are not suitable for such use due to their volatile nature.

Observations made at numerous locations show that seed treatment will have no serious effect on nodulation in soils which have grown nodulated soybeans previously. When soybeans are planted on land for the first time, inoculation of the seed is indispensable, and under such conditions, seed treatment will impair the efficiency of inoculation to a greater or lesser extent, depending on the treatment used. Seed treatment, therefore, probably should not be recommended for the first soybean crop. When both seed treatment and seed inoculation are to be practiced, the procedures should be in that order. Treating can be done at any time before planting, even in the preceding fall. Inoculating should be done just prior to planting, whether the seed is treated or non-treated.

Missouri Soybean Plant

The processing plant of the MFA Cooperative Grain and Feed Co. at Mexico, Mo. New storage tanks (right) with a capacity of 350,000 bushels were built in the summer of 1950. They bring the firm's total storage capacity at Mexico up to 650,000 bushels.

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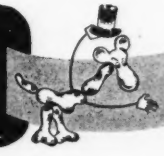

The Pre-Tested Inoculator
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Solvent Extraction of Vegetable Oil

By A. J. FALKENBERG

Secretary and treasurer of American Mineral Spirits Co., Western, Los Angeles, presented at the meeting of the National Oil Mill Superintendents Association Convention in Los Angeles, California, Mar. 11.

FROM THE VERY beginning of solvent method of oil extraction in the United States, a steady if not spectacular forward movement and general improvement has taken place. This applies to the volume of oil extracted, the equipment, solvent, and methods of application.

Solvent extraction of vegetable oil in this country had its real starting point around 1933-1934 with the rapid installation of five German designed and manufactured continuous units. Two of these were Hansa-Muhle of the vertical basket type and three Hillenbrandt units of the U-tube perforated screw system.

The results of these two types of extractors plus the Bonotto system stimulated the entrance into the field of solvent extraction of such American manufacturers as Allis-Chalmers, V. D. Anderson, Blaw-Knox, French Oil Mill Machinery and others. In addition, can be added the equipment of private design and manufacture.

Innovations and modifications have been made over the years that have kept the solvent extraction method always on the increase and it is still expanding. Constant engineering alertness by the equipment manufacturers has been and is still maintained. This study covers capacities, ratio of solvent to charging stock, application of vacuum, preparation of charging stocks, conditioning of meal and oil and general construction.

Such attention has caused the basket type extractor to be constructed not only in vertical position, but also in circular, horizontal and rectangular positions. These new styles offer low buildings which save on construction costs and time savings in operation and maintenance. The development in co-ordinated use of expellers and solvent extraction has definitely placed flaxseed, cottonseed, peanuts and possibly other seeds into the field of solvent extraction. There has also been considerable attention given to handling of the extracted meal in drying and toasting. These changes and others indicate the continued effort on the part of manufacturers and also the operators to improve the quality and economics of the solvent extraction method.

Such attention by the operators and manufacturers has had a great influence in the trend to solvent extraction by the soybean industry. The following figures illustrate that trend.

EXTRACTION OF OIL FROM SOYBEANS U. S. A.*

PERCENT OF SOYBEANS CRUSHED

Oct. 1 to Sept. 30 Crop Year	Screw Press	Solvent Extraction	Hydraulic Press
1945-46	64.2	28.2	7.6
1946-47	63.9	26.6	9.5
1947-48	54.4	37.6	8.0
1948-49	55.3	39.6	5.1

PERCENT OF CRUDE OIL PRODUCED

1947-48	50.7	42.2	7.1
1948-49	51.4	44.1	4.5

* Compiled by U. S. Department of Agriculture from data collected by the Bureau of the Census. (Latest available figures).

From the above figures of percentages there is shown a significant ratio of beans crushed and oil obtained. In the crop year of 1947-48 the screw press method crushed 54.4 percent of the beans and produced 50.7 percent of the oil, whereas solvent extraction accounted for 37.6 percent of the beans but produced 42.2 percent of the oil. These bring about a ratio of 54.4-50.7 for screw press and 37.6-42.2 ratio for solvent extraction. Applying the same for 1948-49 crop year the ratio is 55.3-51.4 for screw press and 39.6-44.1 for solvent extraction. Furthermore in 1948-49 crop year the oil yield per bushel of beans was 9.16 pounds for screw press and 10.94 pounds for solvent extraction. These figures not only show, but also probably explain the trend to solvent extraction method for soybeans.

We regret being unable to furnish the 1949-50 percentage figures because with the new solvent extraction plants of large capacity that went into operation during this period, it would further emphasize the trend to solvent method in soybean extraction.

The sustained and successful trend toward solvent extraction in soybeans

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has no doubt reflected in the adoption of this method to other products such as flaxseed, cottonseed, peanuts and others.

Up until about four years ago very little if any linseed oil was produced on a regular commercial basis by solvent extraction of flaxseed. Since then, the picture has changed considerably. Flaxseed is a high-oil-content seed and for this reason is obstinate and flaking preparation is difficult, resulting in excessive fines. To offset this difficulty, the prepressing or forepressing system has been adopted with highly successful results. In using screw-press alone it was considered excellent to get under 5 percent for residual oil in the cake. By use of the co-ordinated method of prepressing and solvent extraction the residual oil is reported down to as low as .62 percent in the cake. This can amount to as high as 1½ pounds of oil per bushel and the oil is stated to be superior in quality.

There are several firms using the solvent method for deeper extraction. Among them are Archer-Daniels-Midland, Cargill, Inc., Minnesota Linseed Oil and Pittsburgh Plate Glass Co. There are no figures available to indicate the percentage of oil extraction of the new system as against the older, but it is reasonable to assume that the change has been substantial and likely to continue increasing.

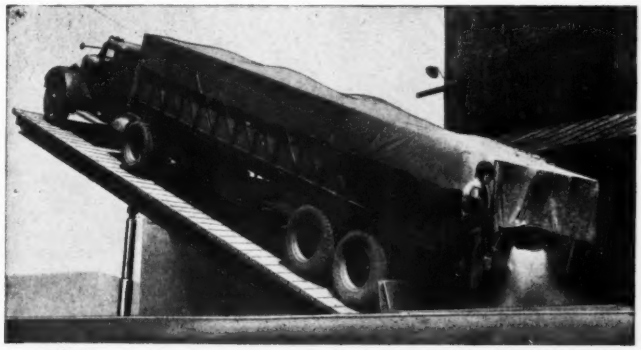
Solvent extraction of oil has also been applied to rice bran, wheat germ, corn germ, safflower seed, castor pomace, cocoa butter, olive pomace and other seeds. These extractions do not offer the volumes of soybeans, peanuts, cottonseed or flaxseed but they do indicate the variety of application open to this method.

The general economy of the overall production does and will always have its influence on the degree of extraction of any one oil regardless of the method used. We now have fish oil, oiticica, castor, safflower and soybean oil as a definite part of the "drying" oil economy, much the same as soybean is a definite part of the "non-drying" oil economy.

In the adoption of solvent extraction method some influence has come from the oil content of various seeds and beans. Soybeans with an oil content of 20 percent can be extracted down to a residue of 3.5 to 4 percent by screw-press process. By solvent extraction the residue is 0.5 percent, thus you are going after 3 percent of a total 20 percent content, or in effect, you extract 15 percent more oil. Applying the same to flaxseed of 35-40 percent oil content you are extracting only 7.5 percent more oil. This will vary with the oil content of different seeds and the percentage that can be extracted by screw-press against solvent extraction or co-ordinated methods. However, it is understood that these oil yield dividends together with the factors of seed costs and prices realized has a strong economic bearing on the type equipment selected when replacement is necessary. Solvent extraction has reached the point where it is a real factor in the general economy and undoubtedly will continue to increase its influence.

The solvent used in solvent extraction of vegetable oils has in the main been hexane. This solvent has been improved in keeping with other changes in the extraction industry. It is of petroleum origin and is in ample supply position.

It appears that all phases of solvent extraction have received careful investigation both through research and practical applications. There is every reason to believe that this attention to the various problems involved will continue in the future with improving results.



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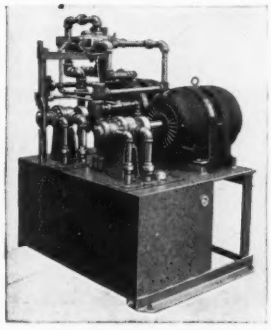

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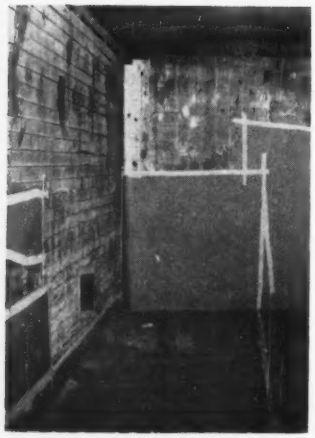

Installation to cover broken and missing end boards is begun by folding the liner in position. Two strips laid side by side will cover a car end or floor. A two-inch tape joins the strips and seals the overlap to the sides. You can use the liner to cover the complete car, or merely holes and cracks.

A special paper is coming to the rescue of shippers of soybeans, meal and mixed feeds who are trying to solve the boxcar shortage problem. Many have difficulty in finding cars that are in good enough shape to meet their needs for either packaged or bulk material.

Rough floors and walls with broken and missing boards or greasy floors can be covered with this paper, known as "emergency upgrading liner." The paper, put out by the J. J. Lipp Paper Co., Chicago, is composed of two sheets of creped paper with a thin layer of asphalt between to make it waterproof. Its 18 percent stretch enables it to cover obstructions and holes and to take scuffs without breaking.

Fastened on floors and walls with pressure-sensitive tape or staples, the paper provides a smooth-moisture-proof surface, changing a rough, stained boxcar into one that can be labeled "A" class.

The papering job can be done in 10 minutes to a half hour, depending on how much of the car you cover.

The liner comes in rolls 62 inches wide and 164 feet long.

In recent weeks some of the leading milling companies and other shippers have adopted the Lipp liner to upgrade available cars so that they will be usable rather than waiting for the railroads to furnish them with suitable cars, the manufacturer says.

—s b d—

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RULING ON LECITHIN

The United States Court of Customs and Patent Appeals recently sustained a decision of the United States Customs Court that a shipment of soybean lecithin imported at Buffalo from Toronto was properly dutiable at 7½ percent ad valorem under paragraph 1555 of the tariff act of 1930 as amended by the trade agreement with the United Kingdom.

The government had contended that the material was properly dutiable at 20 percent under paragraph 1558 as a non-enumerated manufactured article. The appeals court agreed with C. J. Tower & Sons, the importer, that the material was a waste product unsuitable for use in its imported condition.

The customs court previously had held, in connection with an entry of soybean lecithin by the same firm, that it was dutiable at 20 percent as claimed by the government. This was because the importer had failed to show that the product was naturally found as a part of soybeans and was derived solely through processes for the extraction of the oil from the beans.

—s b d—

TUNG INDUSTRY

Five hundred thousand improved tung trees in the Gulf Coast region provide a clearcut example of the value of varied research in increasing the efficiency of a crop. From a few seeds brought from China less than 50 years ago, the industry has increased until the growers actually turn out 5 million dollars worth of nuts containing more than 50 percent high-grade drying oil.

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In a test run operating at a 400-ton cottonseed capacity, the residual oil content was .33%, bettering the guarantee of .56%! Utilities consumption also remained lower than the guaranteed values. The quality of the oil produced was even better than hydraulic oil!

The new Sherman, Texas, oil mill is a versatile oil mill. Future plans call for operation on soybeans, peanuts and flaxseed. Such versatility permits any oil miller to switch from one material to meet market conditions or production plans.

Another interesting milling aspect is that this central Exsolex plant is processing cottonseed meats prepared in six outlying delinting and dehulling mills located up to 160 miles away. This unusual practice is possible for three reasons. First, the versatility in the capacity of Exsolex makes it easy to process any quantity of meats. Second, it has been proved that cottonseed meats may be transported and then processed with a negligible increase in free fatty acids. Third, since cottonseed meats bulk heavier than cottonseed, the meats can be hauled economically over longer distances than cottonseed itself.

Many other oil millers have contracted for Exsolex installations. It pays to investigate Exsolex. Write today.

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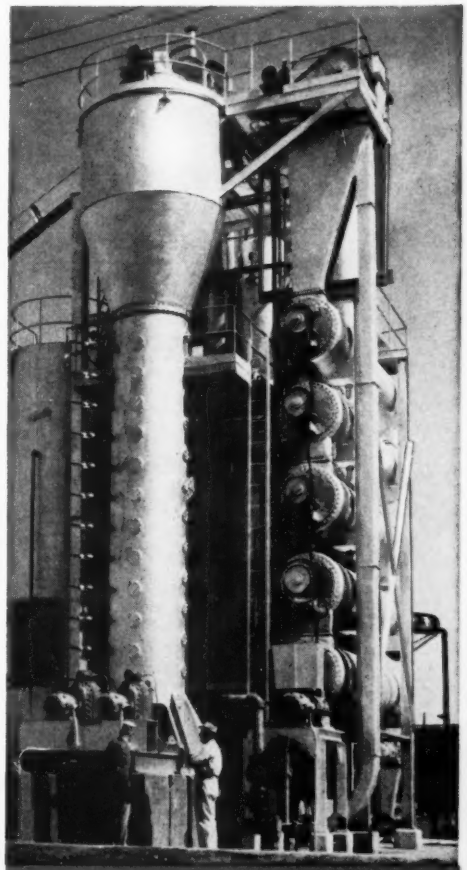

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NEBRASKA CONFERENCE

The first annual Nebraska soybean conference was held in Fremont Apr. 27. Sessions were at the City Auditorium. J. C. Swinbank, field secretary of the Nebraska Grain Improvement Association, was in charge of preparing the program.

The event was sponsored by the Dodge County extension service, the Nebraska Grain Improvement Association, the University of Nebraska, the Fremont Chamber of Commerce and commercial soybean interests.

Taking part in the program were the following speakers, and their subjects.

"How Soybeans Fit in the Conservation Program," J. C. Russell, Soil Conservation Service research agronomist, Nebraska Agricultural Experiment Station, Lincoln, Nebr.

"Developing and Using New Soybean Varieties," D. G. Hanway, soybean breeder, Nebraska Agricultural Experiment Station.

"The Processor's Interest in Soybean Production," Dwight L. Dannen, vice president, Dannen Grain & Milling Co., St. Joseph, Mo.

"The Place of Soybean Meal in the Feeding Picture," Merle Brinegar, swine nutrition research, Nebraska Agricultural Experiment Station.

"The Present Status of Soybeans as a Crop—the Future?" J. W. Calland, managing director, National Soybean Crop Improvement Council, Decatur, Ind.

There was also a panel discussion on the subject of growing soybeans in Nebraska, with the following taking part: Howard Wahlgren, Elk City; Max Junkin, Smithfield; M. Allen McConnell, Gibbon; Alan Mulliken, Nickerson; and Jack Orr, Dakota City, all Nebraska certified seed producers; and Paul C. Hughes, field service director of the American Soybean Association, Hudson, Iowa.

Presiding at the sessions were Harry B. Lilly, vice president Fremont Cake & Meal Co., Fremont, Nebr.; and T. A. Kiesselbach, research agronomist, Nebraska Agricultural Experiment Station, Lincoln, Nebr.

—sbd—

SOY IN PASTRIES

Quick frozen pies and other pastries keep better in frozen storage when a small amount of soy flour is used in the pastry mix, according to the extension service of Alabama Polytechnic Institute.

Pies made with soy flour show very little rancidity, even after a year in storage. This is not true of those made entirely of wheat flour.

When pies are baked before freezing, they turn out to be less rancid than those stored raw and baked just before serving.

Remember not to substitute more than 20 percent soy flour for wheat flour. "Even this much in some pies will give too much soybean flavor," warns Lavada Curtis, A.P.I. extension service food preservation specialist.

—sbd—

STALEY PROMOTIONS

SMITH MOORE

Three executive promotions in the oil sales department of the A. E. Staley Manufacturing Co., Decatur, Ill., have been announced by Melvin J. Longbons, department manager.

James W. Moore, 36, supervisor of refined oil sales since 1948, has been named assistant manager of the oil sales department. He succeeds William B. Goff who has accepted a position with Mid-States Fats and Oils Corp., Bunker Hill, Ind.

Replacing Moore here as refined oil sales supervisor is Lloyd J. Smith, 29, who has been the company's oil sales manager in Chicago since 1949.

The new Chicago oil department manager is Stanley F. DeJanes, 32, a Staley employee since 1939 and a member of the oil department staff in Decatur since 1948.

FAIR TRIAL!

They say anybody's entitled to that much, anyway. So that's all we ask.

We're talking about our facilities for handling cash market orders in *soybean oil, soybean meal,* and *feed ingredients.*

We've spent a good deal of time and trouble on those facilities . . . have done all we could to gear them to meet your needs.

We've placed exceptionally well-qualified men in most major markets . . . belong to every important exchange . . . and have 50,000 miles of private wire to speed vital market information — and the execution of your orders.

We think you'll find those executions more than satisfactory — but then *we* would.

What we'd really like to have is *your* verdict . . . and all we ask is a fair trial.

Why not call our nearest office on your next order involving soybean oil . . . meal — or feed ingredients?

We think you'll find we can prove our case.

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INDIANA FIRM SOLD

WILLIAM B. GOFF

The former plant of Ladd Soy Products, Inc., Bunker Hill, Ind., has been occupied since Apr. 1 by the newly organized Mid-States Fats and Oils Corp. Officers of the firm are Paul J. Sicanoff, president; William B. Goff, vice president and general manager; and George Shaw, secretary-treasurer.

Goff, who has been with the oil sales division of A. E. Staley Manufacturing Co., Decatur, Ill., for the past 10 years, has taken over active management of the soybean processing plant. Built originally in 1945 on a five and one-quarter acre site, the present plant can process over 2000 bushels of soybeans daily.

Goff has established residence at Peru, Ind. With him are his wife and two and one-half year old son.

—sbd—

ICIA REMODELS

A $10,000 to $15,000 remodeling program is already under way on the new home of the Illinois Crop Improvement Association at Urbana, Ill.

Mrs. Berniece Michael, ICIA secretary, says a vacant garage, 58 by 132 feet, was recently bought for an undisclosed sum. It is located next door west of the present offices in Urbana.

The ICIA, the official seed certifying agency in Illinois, handles from 20 to 30 carloads of grain bags a year and several carloads of paper bags used in plant breeding work.

HYTROL CONVEYOR

Designed to carry bags, boxes or bundles for stock piling and from floor to floor, the Hytrol conveyor folds into one-half of its full length and is convenient for storage. It elevates from any angle by simple hydraulic control and height can be changed while in operation.

Materials may be elevated up or down by turning a switch. There are no sides to interfere with extra large boxes or cartons.

Of sturdy welded steel construction, this conveyor is built for a long life of heavy duty service. For complete descriptive literature and prices, address Burrows Equipment Co., 1316-D Sherman Ave., Evanston, Ill.

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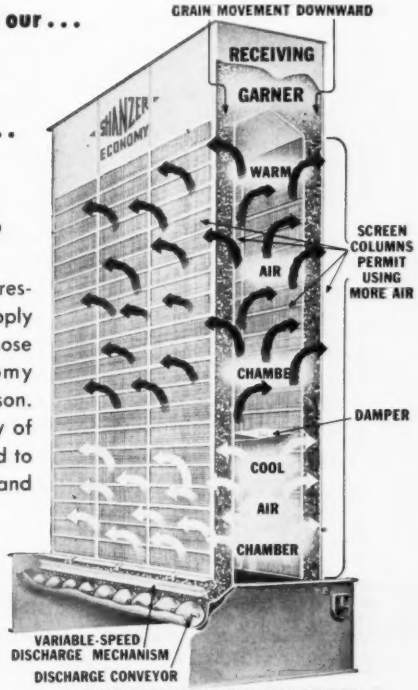
ECONOMY DRIER . . . we would have virtually been out of . . . business"

writes L. M. McCorkle, President of the Waldo Supply Co., Waldo, Ohio whose new Shanzer Economy Drier proved itself in profits last season. Fuel costs were only 8/10ths of a cent per bushel. Quality of grain dried was so excellent that farmers and brokers failed to tell the difference between Shanzer Economy dried grain and *naturally dried grain!*



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Increase Your Yields, Not the Acres

By L. J. NORTON

Farm Economist, University of Illinois. Condensed from Illinois Farm Economics

There should be no limits set by the government as to acreage planted to grains and soybeans.

This is in line with current policy. Quick elimination of these restrictions shows that we have learned a lesson because allotments were continued longer into the war period during World War II.

The individual farmer should plan on high level production over a period of years. At this time it looks as though we were in a long distance run rather than a sprint. This means that good rotations that help to maintain yields should be maintained even though this means a smaller acreage of corn and soybeans than would an all-out program for high production in 1951.

Two factors that argue for this policy are:

1—We are likely in a long period of military effort.

2—Conditions seem to favor some expansions in cattle and sheep effort. These require hay and pasture.

It will pay to go after high yields. Fertilizers would seem to be the most readily available technique for accomplishing this. Use of fertilizers has increased rapidly in the Cornbelt since 1940 but there is still much room for expansion.

A factor in the present high prices for soybeans is the short crop of cotton. We produced 9.9 million bales of cotton in 1950 compared to 16.1 in 1949. With each bale of cotton comes about 1,000 pounds of seed and roughly 160 pounds of oil. Cottonseed oil has been high in price and this has dragged up the price of our big crop of soybean oil.

In fact the short crop of cotton and the high world demand for animal fats have been the two facts that do much to explain the high price of soybeans. Soybean oil is about 10 cents a pound higher than a year ago. This equals about 1 dollar a bushel of soybeans.

The government wants a bigger crop of cotton—16 million bales is the goal. Prices are high and so increase in acreage and output are likely. The cold winter has probably reduced the population of boll weevils. This will tend to make more cotton and so cottonseed oil. Soybeans could easily sell for lower prices next season than this.

The big advance in soybean prices came earlier than in 1949-50. An additional reason for these high prices is consumer and trade stock piling of fats both in the United States and western Europe. It is reported that we may export 20-25 million bushels. We shipped out about 4 million in November. A factor in exports is the mucn shorter crop of olive oil in the Mediterranean area. This creates a demand for cheap "seed oil" and soybean oil can be so used.

If crushings continue at the recent rate of 23 million bushels a month and exports are as high as the figure mentioned we may again have a very small carryover from our very large 1950 crop. Forward prices for soybean meal are above spot prices which are at their midwinter seasonal low.

—sbd—

THAILAND CROP

The 1950 soybean harvest in Thailand is estimated at 400,000 bushels from 30,000 acres, reports U. S. Department of Agriculture publication Foreign Crops and Markets.

FORT WORTH QD Roller Chain SPROCKETS WITH TAPERED SPLIT HUB

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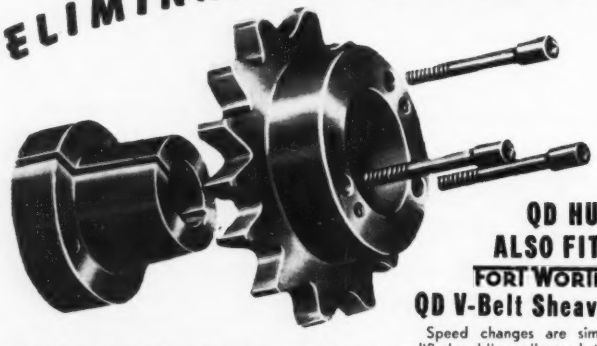

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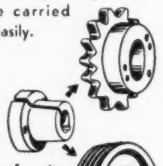
Replacement cost of sprockets is reduced as same hub can be used for new sprocket.

Catalog explaining additional advantages and construction details will be furnished on request.

Speed changes are simplified and "spare" sprockets can be carried more easily.



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General view of General Vegetable Oil Co. properties at Sherman, Tex.

New Trend at Sherman Tex., Plant

One of the most important developments in the oil milling industry since the turn of the century is believed to be occurring at a new large 400-ton mill, recently erected and placed in operation for the General Vegetable Oil Co., at Sherman, Tex. This mill employs the use of the new Exsolex process and is the first all new Anderson Exsolex plant to operate on cottonseed. The word "Exsolex" applies to a process combining Expeller-Solvent Extraction into one integral system, recently developed by the V. D. Anderson Co., Cleveland, Ohio. The first of a series of patent applications covering the process has been officially approved. Further applications are pending.

The General Vegetable Oil plant is presently extracting cottonseed. The entire mill was started up Feb. 25 for test runs. On March 22, the plant was increased in capacity to the guaranteed capacity of 400 tons of cottonseed per day.

The plant also will process with the same equipment peanuts, soybeans and flaxseed. The opinion among many oil mill owners, managers, and superintendents is that versatility in oil milling practice may be the answer to the rapidly changing vegetable oil picture due to fluctuating markets.

In another way, the advent of a versatile oil mill overcomes a hereto-fore serious defect in oil milling practices in the South. The extraction of any cottonseed oil is usually highly seasonal. This results in many mills being idle during part of the year. With Exsolex, the oil miller uses his capital and provides employment during the "off" season, since a mill can switch over from one commodity to another as the various oil-bearing seeds and nuts are harvested.

To illustrate, 76 percent of the domestic cottonseed crop reaches oil mills after the crop is harvested in mid-summer and before the first of December. By the end of January over 90 percent of the seed is received by the mills. To handle this fast movement, nearly all mills operate 24 hours a day during the fall and winter months. During the remainder of the year, many cottonseed oil mills are idle or engaged in other activities in order to utilize their capital such as the manufacturing of fertilizer, mixed feeds, ice and the distribution of agricultural implements. Exsolex will permit many of these cottonseed oil millers to handle other oil-bearing materials, particularly soya and peanuts during the "off" season, ending the unprofitable practice of shutting down an oil mill for many months of the year.

The equipment at Sherman, Tex., consists of two large cottonseed meats storage bins. The meats from these bins are conveyed to roller mills in the oil plant and thence to two large cottonseed cooking vessels. The rolled and cooked cottonseed meats are then prepressed in five Anderson PreExpellers. The oil from this prepressing operation is settled in an Anderson screening tank and then filtered before being pumped to oil storage. The cake from the Anderson PreExpellers is broken into particles. This granulated cake is flaked into tough, durable flakes. The flakes thus produced are conveyed to the Anderson solvent extraction unit wherein the oil remaining in the press cake is extracted to yield a cottonseed meal containing .26 to .4 percent residual oil. This meal is cooled and then conveyed to meal storage. The solvent extracted oil, after removal of the solvent, is mixed with the prepress oil and likewise pumped into storage.

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Late Spring Will Push Up Soy Acreage

Cold, wet weather with a late spring that has delayed field work may push soybean acreage beyond earlier expectations of many observers. But most Digest reporters believe the total will be less than it was in 1950.

Corn and cotton are making a comeback and inroads on the soybean acreage due to the removal of restrictions on acreage. Also, the price structure is more favorable to these crops than to soybeans.

On the other hand, a late, wet spring over practically all of the soybean belt has cut down on wheat and oats acres and soybeans will benefit, as is always the case when small grain planting is destroyed or delayed.

Seed is germinating well, and supplies are mainly adequate.

The shift to newer adapted varieties continues.

Reports of Soybean Digest crop reporters follow:

Alabama

J. H. Bryson, Jr., Dothan Oil Mill Co., Dothan, for southeast Alabama, northwest Florida, southwest Georgia (Apr. 23): Acreage 100% of last year, about 3,000 acres. Increase in cotton acreage, decrease in corn. Weather conditions excellent. Not enough seed of adapted varieties. Seed germinating 90%.

H. I. West, Bay Minette, for Gulf Coast, southwest Alabama and northwest Florida (Apr. 23): Expecting 65,000 acres in Baldwin County, a 15% increase. Other counties will show about 10%. Price ceilings have encouraged plantings, one of main factors increasing acreage. Winter killing of lupine will cut acreage some as some of this land has been planted to corn. Late spring so far. Acreage to Clemson will be reduced.

Arkansas

L. M. Humphrey, R. L. Dortch Seed Farms, Scott, for Little Rock area (Apr. 24): Less than 5% planted. Acreage about 80% of 1950. Cotton will take the loss in soybean acreage. Price ceilings making beans very popular. Corn losing much acreage. Spring late. Moisture conditions are favorable. Enough seed but no surplus. Seed germinating 80-90%. Less S-100 and Arksoy varieties. More Dortchsoy 2 and 31.

Keith Bilbrey, county agent, Blytheville, for north half of Mississippi County (Apr. 23): 10% of crop planted. Probable acreage 60% of 1950. Cotton replacing soybeans and corn. A bad spring and excessive grass will cause some cotton to be plowed up and planted to soybeans. Latest date for cotton planting is about May 15 or 20, for soybeans about July 4.

Jake Hartz, Jr., Jacob Hartz Seed Co., Stuttgart, for south central and southeast (Apr. 24): Probable crop 25% less than 1950. Rice and cotton acreage up. Farmers satisfied with support. Ceiling will not affect acreage. Farm work 10 days late but cotton and rice will be planted as intended. Winter oats winterkilled but have been seeded to lespedeza. Seed generally enough, maybe short on good Ogdens. Very few hay varieties to be planted this year.

Florida

E. N. Stephens, county agent, Pensacola, for Escambia County (Apr. 23): 5% of crop planted. Probable acreage 105% of 1950. Too much rain and cool weather.

Illinois

C. G. Simcox, Assumption, for south central (Apr. 24): Probable acreage 75% of 1950. Large wheat acreage, more corn. Weather cold and wet. Sowing oats today. 100% more Hawkeyes than 1950.

Gilbert F. Smith, Mahomet, for east central (Apr. 25): Acreage same as 1950. Some oats acreage shifted to beans. Oats being finished this week. None sowed before Apr. 18. Seed germinating fair to good.

Russell S. Davis, Clayton, for west central (Apr. 25): Probable acreage higher than 1950 and USDA Mar. 1 forecast. Considerable wheat acreage will go to beans and sizeable portion of oats will not be seeded due to lateness of season.

Walter W. McLaughlin, Citizens National Bank, Decatur, for Decatur (Apr. 23): Probable acreage 90% of 1950. Corn will be increased slightly due to removal of restrictions. However, late season has reduced oats acreage slightly and part may be planted to beans. Some winter killed wheat may be planted to beans. Have had cold, wet spring.

J. E. Johnson, Champaign, for

INOCULATE SOYBEANS

with

Urbana Culture

Superior Legume Inoculator

IT PAYS

The Urbana Laboratories

Urbana, Illinois

Champaign and adjoining counties (Apr. 24): Would say at least 5% less acreage than 1950 due to increased corn acreage. No winter killing of wheat. Anticipate slowing of heavy rainfall that has continued since last November. Our emergency seedings come when we have drowned out areas in cornfields, which is not probable. Unusually cool with continued rains. Soil conditions better than 1950. More fertilizer used. Good supply of seed with germination reports very favorable. Hawkeye seems to be favorite. Lincoln next. Some talk about Adams.

Indiana

K. E. Beeson, extension agronomist, Purdue University (Apr. 24): Relative prices of corn and soys more in favor of increasing corn acreage than soybeans. Considerable acreage of wheat suffered severely from winter killing. How much will be abandoned and sown to oats, corn or wheat has not been reported. Weather not favorable for plowing, etc., until late April. Supply of certified Hawkeye, Lincoln and Wabash is adequate. Acreage of Wabash in southwest Indiana will be increased.

Peter J. Lux, PMA state committee, Indianapolis (Apr. 25): 2½% acreage increase as compared with 1950. Season late, too much rain. Seed germinating good. About same varieties as 1950.

George K. Black, J. A. McCarty Seed Co., Evansville, for southwestern (Apr. 23): Acreage same as 1950. Corn will increase but soybeans will replace oats and abandoned wheat. Current support not high enough to encourage additional acreage. Some lots of seed germinating low.

Iowa

Fred Hawthorn, Castana, for western (Apr. 24): Probable acreage 20% over 1950. Present price favors increase. Unprecedented late spring will cause land intended for oats to go to corn and beans. Floods on river bottoms will mean more of this ground will go in late to beans. Our seed germinating 98%. More Adams, but Hawkeye will be leader here this year.

Robert S. Overton, Knoxville, for Marion County (Apr. 24): Probable acreage 60% of 1950. Corn cutting into soybean acreage. A few feel ceiling was placed too low. Feed shortage and increase in loan rate will increase corn acreage. Cold and wet. Farm work two weeks late. Seed germinating fair.

Robert S. Kalton, farm crops department, Iowa State College, Ames (Apr. 23): Probable acreage 10-15% less than 1950. Corn may take over some of acreage. Too low ceilings for soybeans compared with probable parity prices for corn. Late season may result in less reduction in soybean acreage than expected. Sufficient seed of adapted varieties. Seed germinating good. More Adams, somewhat less Lincoln and Hawkeye. If normal planting season, 95% of production will come from newer varieties, Lincoln, Adams and Hawkeye.

John P. Roach, Roach Soybean Mills, Plainfield, for northeast (Apr. 24): Probable acreage 90% of 1950. Present ceiling price on beans keeping acreage from dropping further. Some beans may be planted on oat ground due to late spring. Counties north of us need Blackhawk seed. More Hawkeyes being planted.

John Sand, Marcus, for northwest (Apr. 25): Probable acreage 25% above 1950. Slight increase due to wet conditions for seeding oats. Seed germinating very good. We have several lots germinating 98%. Increase in Adams variety.

Kansas

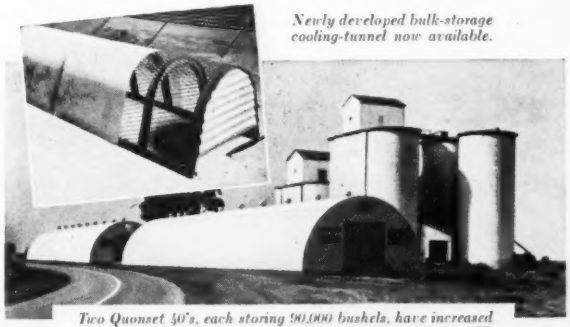
H. L. Collins, Topeka (Apr. 24): Probable acreage 122% of 1950. Difficulty planting oats and some acreage shifted to later crops. Most corn but possibly some soybeans. Very cool, backward spring. Soil moisture good.

E. A. Cleavinger, extension division, Kansas State College, Manhattan, for eastern (Apr. 23): Probable acreage 110% of 1950. Acreage has become stable. It has not varied much for four or five years. Increase in Wabash.

Louisiana

W. M. Scott, Tallulah, for northeast (Apr. 24): 10% to 15% of crop

Newly developed bulk-storage cooling-tunnel now available.



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planted. Probable acreage 85 to 90% of 1950. Cattle and cotton cutting into soybean acreage in this section. Farmers feel they are still at the mercy of the market at harvest time. About 20% have built farm storage. Weather too wet and cool. Very little planting done. Germination of seed should be higher than usual. Less planting of S-100.

Missouri

J. Ross Fleetwood, extension specialist field crops, Columbia (Apr. 24): Probable acreage 90% of 1950. Cotton cutting into soybean acreage in southeast. Prospect for good prices and recent high yields encourage production. Less than 50% of intended oats acreage was planted. At least part of this will go to soybeans. Season two to three weeks late. More Wabash.

Carver Brown, Laddonia, for northeast (Apr. 24): Probable acreage 100% of 1950. Soybeans are cutting into oats acreage. Market outlook generally considered normal to favorable. Weather has been so wet and cool that very few oats have been seeded. A large percent of ground intended for oats will be put into soybeans. Some increase of Wabash due to greater seed supply.

E. M. Poirot, Golden City, for southwest (Apr. 26): About the same or slight increase in acreage as compared with 1950. Trend to shift to corn. Weather wet and cold. All farming delayed. This may increase soybean acreage if it continues. More S-100.

O. H. Acom, Wardell, for southeast (Apr. 23): 10% of crop planted. Probable acreage 90% of 1950. Some cotton increase on bean land. Ceiling too low on beans. Weather good. Seed germinating extra good. More Ogden and Wabash, less S-100.

A. F. Stephens, general agricultural agent, Gulf, Mobile & Ohio Railroad, St. Louis, for northeast Missouri, central and western Illinois (Apr. 23): Probable acreage 90% of 1950. Corn cutting into soybean acreage in Illinois. Weather cold and wet. Season is getting very late for oats. Wabash will increase in northeast Missouri.

Minnesota

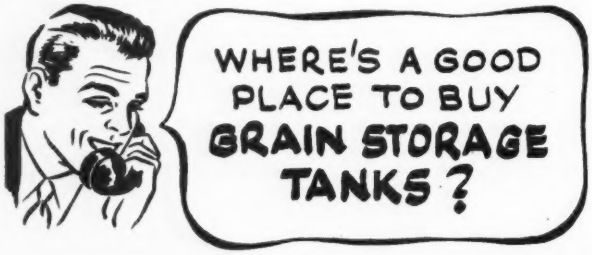
Howard E. Grow, Farmer Seed & Nursery Co., Faribault, for southeast (Apr. 21): Corn cutting into soybean acreage. More wheat had been planned but with lateness of season soybean acreage may increase. Rain or snow for nine consecutive weeks. Most fields bare of snow. No frost in ground. May be some increase in Capitol. Small acreage of Blackhawk.

R. E. Hodgson, Waseca, for south central (Apr. 23): Probable acreage 100% of 1950. Late spring may offset anticipated cuts in acreage. Soybeans still attractive as cash crop here. No field work done yet. Late spring always favorable for soybean acreage as can be planted even later than corn. Soil soaked to greater depth than past several years. Still cold. Most reports on germination good where combining was carefully done. Monroe did not meet with general favor here. Blackhawk promising.

Nebraska

Fremont Cake & Meal Co., Harry E. Wiysel, Fremont, for east central (Apr. 25): Probable acreage about same as 1950. Due to late spring, some acreage intended for oats will be put to beans. More Adams and less Lincoln.

Donald G. Hanway, assistant agronomist, University of Nebraska, Lincoln, for eastern and central (Apr. 27): Probable acreage 115% of 1950. Weather prohibiting normal



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oats planting should increase soybean acreage. Cold and wet in eastern Nebraska. Acreage of Adams will be increased considerably.

North Carolina

J. Morgan, Morgan Oil & Refining Co., Farmville (Apr. 23): 10% of crop planted. Probable acreage 100% of 1950. High bean prices encouraging planting.

North Dakota

L. Orvold, agricultural statistician USDA, Fargo (Apr. 23): Probable acreage 90% of 1950. Favorable small grain seeding conditions could cut acreage. Some plant soybeans as catch crop.

Ohio

Soybean Johnson, Delphos Grain & Soya Products Co., Delphos, for northwest (Apr. 23): Acreage probably near last year's total. Soybeans will be gainer in acreage shifts with other crops. 40% of wheat badly damaged. Some will be left as too late to seed much oats. Some corn left in field. Looks like 20% wheat to oats. Total oats 75% of intent. With 25% oats reduction will go to corn or soybeans. With favorable weather at planting time probably over half this will go to corn, but enough to beans to equal last year's acreage. Increase in Hawkeye acreage. Possibly some increase in Monroe.

Calvin Heilman, Kenton, for Hardin, Wyandot and Marion Counties (Apr. 27): Probable acreage 90% of 1950. More corn and oats, due to price factor. If corn planting is delayed too much beans can replace corn. Farm work about average progress. Seed germinating 85 to 90%. More Hawkeyes and Monroes, not so many Lincolns.

G. G. McIlroy, Irwin, for west central (Apr. 23): Probable acreage 5 to 10% less than 1950. Corn and increasing tendency to have more acres in legumes cutting into soybeans. Lots of wheat will be disked or plowed and sown to oats, planted to corn or soybeans. All wheat planted after soybeans or planted late is poor or almost total loss. Varieties mostly Hawkeye or Lincoln.

Tennessee

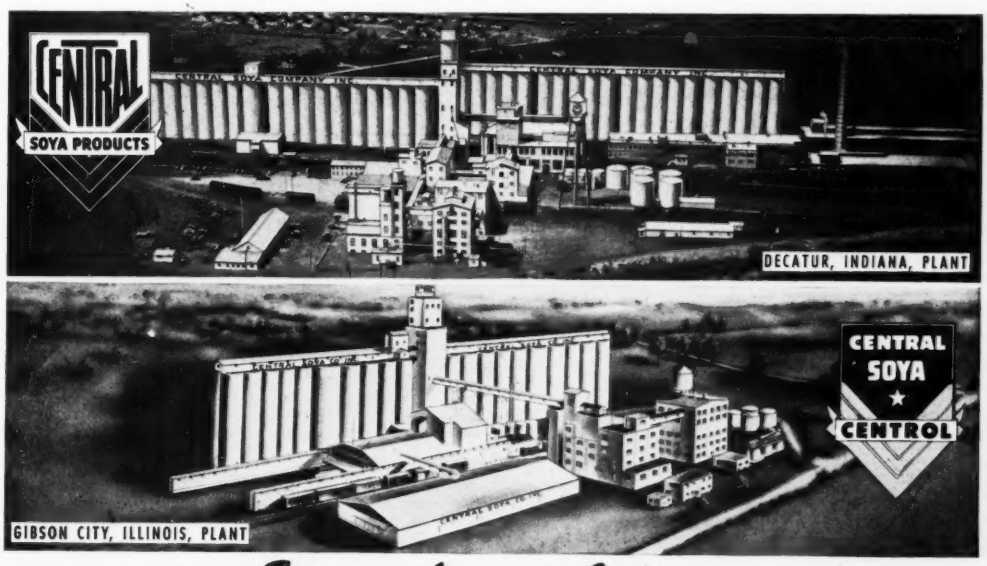
Peter Fredrickson, Tiptonville, for Lake and Obion County, Tenn., Fulton County, Ky. (Apr. 23): 5% of crop planted. Probable acreage 90% of 1950. Cotton will cause reduction in Lake County. Very little effect in other two counties. Beans more profitable in this area than corn, unless corn is fed to stock on farm. If high water continues very long bean crop in Lake County will be increased. Weather wet and cold.

Virginia

A. C. White, assistant extension agronomist, Blacksburg (Apr. 23): At least 30% of corn crop with soybeans for hogging is planted. Probable acreage 115% of 1950. Soybeans may be planted on land previously planted to potatoes. Many farmers will rush after small grain harvest to double crop their land with a crop of soybeans. Support price is making production of soybeans very attractive to farmers this year and will cause some who have never planted beans to plant them in 1951. Weather very normal. Seed germinating very good. We are, however, promoting use of seed fungicides and inoculants. Will be more acres planted to major full season variety, Ogden, and less to the early season variety, S-100, because of dissatisfaction of farmers with S-100 performance in 1950.

Wisconsin

Geo. M. Briggs, Agronomy Build-



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TENNESSEE TC CORPORATION

ing, Madison (Apr. 23): Probable acreage same as 1950. Ratio of corn prices more favorable to corn than to increased acreage of soybeans. Last summer's early frost may react against increased acreage. Too early to summarize winter injury. More Monroe being used.

Ontario

R. H. Peck, River Canard, for southwest (Apr. 24): Probable acreage 125% of 1950. Soybeans cutting into corn and oats crops. In Canada, the price prospect, considering U. S. ceiling, which is a controlling factor, is quite satisfactory. Continued cold weather may cut down on oat acreage with an increase in soybean acreage. Very little change in varieties except for more Monroes and a few Blackhawks.

—sbd—

SOLVENT MEAL ON TEST

Four kinds of solvent soybean meal are now being tested at the Illinois College of Agriculture.

D. E. Becker, animal scientist, says the four types being fed to growing-fattening pigs are regularly processed meal, the desolventized kind, partly toasted meal, and trichloroethylene-extracted meal.

Eight lots of pigs are on test. All are on rye pasture with a ration of yellow corn, alfalfa meal and mineral mixture, plus one of the various meals.

Desolventized meal has the oil extracted by hexane without toasting. If this proves satisfactory, perhaps the cost of making soybean meal can be reduced by eliminating the toasting.

Partly toasted meal has the oil extracted with a solvent, but is heated only half as long as regularly processed meal.

Trichloroethylene-extracted meal is the same except that this chemical replaces hexane as the solvent.

Four of the eight lots of pigs are getting the basic soybean oil meal rations. The other four lots have aureomycin added to the basic rations to see whether it will produce faster gains. All hogs will be slaughtered at 200 pounds.

—sbd—

Please mention the Soybean Digest when writing to our advertisers.

Soys Under Irrigation in Nebraska

—Union Pacific Railroad photo

Above you see a field of soybeans under irrigation in central Nebraska, where a small acreage is being grown.

Soybeans are not primarily thought of as an irrigated crop—the returns from competing crops under irrigation are too high. Trial plantings were made several years ago of from three to five acres of soybeans under irrigation in eastern Oregon and southwestern Idaho. The crop did very well and yields were much higher than in the Midwest. But they could not compete with the high returns from other row crops in the area. And too much water late in the season kept them growing and they were late in maturing.

But in central Nebraska soybeans compete quite well with other crops. Max W. Junkin of Smithfield, Nebr., reports yields of around 40 bushels per acre for the past several years.

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PUBLICATIONS

Soys Not Profitable in Europe

Soybeans are not adapted to the climate of the northern part of Western Europe, report Robert M. Walsh and Roland O. Weibel.

The food and agriculture organization committee of the Organization for European Economic Cooperation has just issued a study by Walsh and Weibel on oilseed crops in Western Europe. The report is the result of a survey in Europe during the summer of 1950 by Walsh, who is assistant director of the fats and oils branch of Production and Marketing Administration, and Weibel, assistant professor of crop production and plant genetics research of the University of Illinois.

It is in the river valleys of south Germany and some areas in Bavaria, southeast and southwest France, and the north and north central part of Italy that soybeans show some promise of being adapted for seed production. The areas of possible production in Turkey and North Africa are along the Black Sea in Turkey, and in the irrigated sections of both Turkey and Morocco.

Considerable research has been done in Germany, France and Italy. The character needed in these areas is earliness, non-shattering, and types with pods setting higher on the stem. The varieties available have been short-growing, with pods close to the ground, and the seeds shatter badly on maturity. New material —mainly American strains—introduced recently into the breeding programs shows promise of improving the growth habit as well as reducing the shattering and increasing the yields.

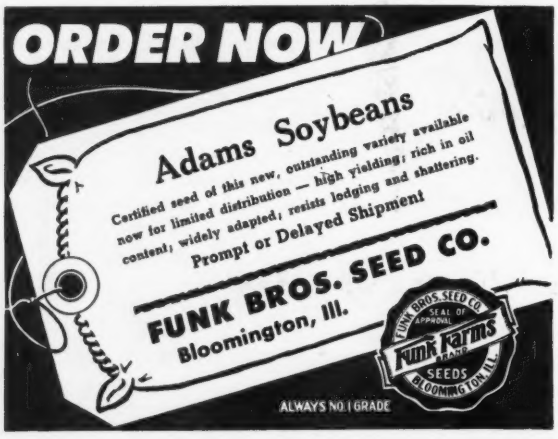
The areas where soybeans may be grown are areas of more intensive agriculture, and seed production must be high for soybeans to compete. One objection has been the low oil content of the seed as well as the low yields obtained with the available varieties.

Much less research has been conducted on the irrigated land now being brought into production in Turkey and Morocco, and there may be limiting factors. Initial soybean trials look promising.

The possibility of large areas being adapted to soybeans is questionable. But smaller areas in the various countries discussed would seem to be adapted.

Only in Turkey and French North Africa, and to some extent in southern France does an expansion of oil crops seem feasible without displacement of other crops, the authors believe. In general, oilseeds in Europe, and particularly northern Europe, yield less and cost more to produce than grains. In peace time it is doubtful if they can compete with imported oilseeds and oils.

OIL CROPS IN WESTERN AND SOUTHERN EUROPEAN COUNTRIES. REPORT BY UNITED STATES SPECIALISTS. Food and Agriculture Committee, Organization for European Economic Cooperation. Paris, France.



Native Soys in Sweden

Attempts to grow foreign soybean varieties in Sweden have not been successful. But hybridization and selection for adaptation to the Swedish climate have resulted in a large number of strains which ripen as far north as Norrkoping, latitude 58 degrees 30 minutes. Day length is no longer an obstacle to soybean growing in Sweden.

Three strains of the variety Fiskeby III show a mean yield of 27 bushels per acre during four years at two stations in the districts of Ostergotland and South Kalmar.

There is little or no difference in bean yield or protein content between the U. S. and Sweden for these varieties. But American tests give about 4 percent more oil.

Only edible types of soybeans are of interest for growing in Sweden. Fiskeby III has found usage for food principally in the Swedish army.

The chief aim of soybean breeding work carried on by Sven A. Holmberg in Sweden is a further increase in yield while retaining the present standard of edible quality and early maturity.

SOJABONODLINGENS MOJLIGHETER OCH BERATIGANDE I VART LAND. By Sven A. Holmberg. Published in Swedish with an English translation.

Soybeans in the Delta

The lower Mississippi Valley is now second only to the Cornbelt in soybean production. But acreage will probably continue to increase and may exceed the acreage of cotton, according to Merle C. Prunty, Jr., head of the department of geography and geology at the University of Georgia.

The tri-state Delta area of Missouri-Arkansas-Tennessee is still well behind the Cornbelt in the bushels of soybeans it produces. Annual production has been about 10 million bushels compared with 85 million bushels in Illinois alone.

Big increase in production of oil beans in the lower Mississippi Valley came between 1939 and 1944. Prunty sees the following as among the causes for the increase:

1—Cotton acreage limitations under the AAA until 1942 that permitted cash crop production of oil beans to gain a toe hold.

2—Development of new soybean varieties that increased per-acre yields.

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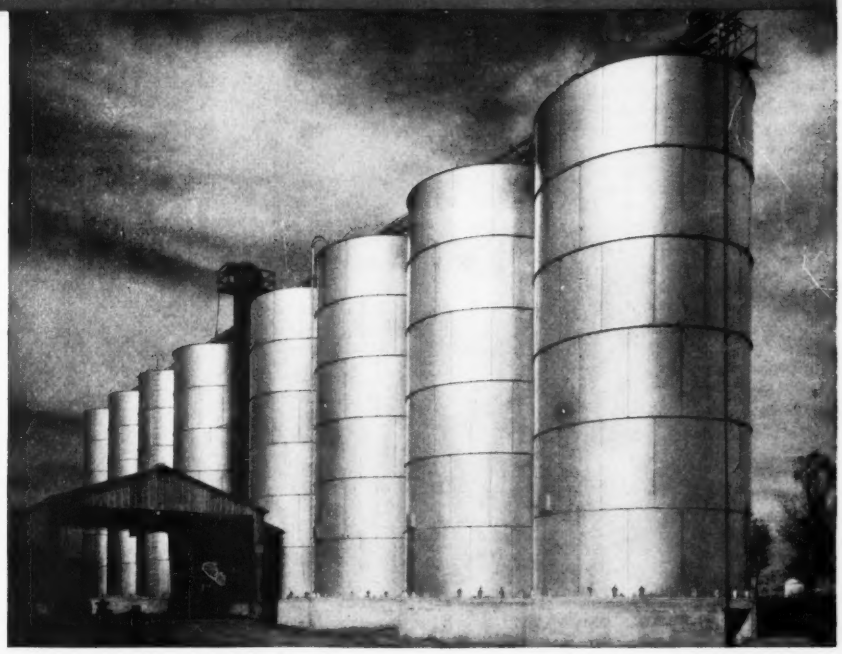

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3—Governmental price support for soybeans.

4—Wartime demand for vegetable oils.

5—Substantial farm power mechanization.

6—Labor shortages during the war years that held down cotton acres.

7—Soybean cultivation was fitted into cultivation and harvesting of cotton without difficulty, providing fuller use of available labor.

8—Soybean production fitted the share-crop and tenancy land tenure system of the district very well.

9—The cotton share-crop system, through its similarity to soybean share-cropping, aided in procuring cultivation loans to begin bean production and stabilized marketing by guaranteeing all participants their share of profits.

10—The soybean could be substituted for cotton in event of failure of cotton plantings.

11—Machine cultivation characteristic of soybean production appealed to tenant and share-crop operators, for larger acreages could be handled than with cotton, and individual profits were greater.

12—Net profits from soybean production were comparatively large due to the relatively small production cost per acre.

Since 1944 acreage in the lower Mississippi Valley has increased further, until the acreage of soybeans closely rivals cotton. Purchase of fertilizers and farm mechanization have increased in the area. And local oil mills now consume the bulk of the crop.

New varieties are being developed that may extend the oilbean-producing belt southward into the Yazoo basin and northeastern Louisiana in the next 10 years, in Prunty's opinion.

SOYBEANS IN THE LOWER MISSISSIPPI VALLEY. by Merle C. Prunty, Jr., head of the department of geography and geology, University of Georgia. Economic Geography. Oct. 1950. Vol. 26, pages 301-314.

Oil Content

The farther south you go, the higher the oil content of the soybeans.

Two-year averages for seed yield per acre, percentage of oil content, and oil yield per acre have been computed for 22 soybean-producing states. Results are covered in a report by Noriar Pahigian, agricultural statistician of the fats and oils branch of Production and Marketing Administration of the U. S. Department of Agriculture.

It is found that:

1—Northern states average higher in both seed yield and oil yield per acre than Southern states.

2—Southern states averaged higher in oil content of the seed.

Analysis of state averages shows there is a positive relationship between oil content and temperatures during the growing season. For this reason, the southern sections could be expected to grow soybeans with higher oil content than those grown farther north.

There is a slight negative relationship between total rainfall and oil content during the growing season. This may or may not be significant.

There is a tendency for both the protein content of the soybeans and the iodine number of the oil to decrease as you go south. This is to be expected, as previous studies have shown that as oil content goes up protein goes down, and iodine number varies with latitude.

The results to date are preliminary. Fats and oils branch has further studies now under way.

MARKETING STUDY OF THE OIL CONTENT OF SOYBEANS AS RELATED TO PRODUCTION AREAS AND CLIMATE. By Noriar Pahigian. Fats and Oils Branch, Production and Marketing Administration, U. S. Department of Agriculture, Washington, D. C.

Oilseeds in Illinois

Investigations of new oil crops at the Illinois Experiment Station continue, with promise that some of them may eventually prove of commercial value in certain sections of Illinois.

Castor seed and sunflower seed are probably the most promising, though work has also been done with perilla, sesame, safflower, Argentine black rape, mung beans and guar.

PROGRESS IN SOLVING FARM PROBLEMS OF ILLINOIS. Report for 1947-48. University of Illinois Agricultural Experiment Station, Urbana, Ill.

Nitrogen on Soybeans

Ammonium nitrate plowed down for soybeans gave significant increases in yield, percentage of crude protein in the seed and pounds of crude protein produced an acre in tests at the Illinois Experiment Station. These tests are reported in the station's report for 1947-48.

Increasing the amounts of ammonium nitrate applied to the soil resulted in a consistent reduction in the number of nodules per plant. But this reduction in nodules was accompanied by a greater yield of soybeans.

Four hundred pounds of ammonium nitrate an acre gave the largest yield, 23.2 bushels, almost twice the 12.2 bushels yielded by the check plot in which the plants depended on root-nodules bacteria for their major source of nitrogen.

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PROBLEMS IN ILLINOIS. Report for 1947-48. University of Illinois Agricultural Experiment Station, Urbana, Ill.

Low-Cost Proteins

Dry skim milk, soy flour and food yeasts are three low-cost high-protein foods which can be combined successfully with cereal foods to improve the nutrition especially of low-cost diets, according to Dr. Barnett Sure of the Arkansas Experiment Station. Dr. Sure points out that cereal grain foods are the cheapest sources of calories and are consumed in largest proportion by people of low-income levels. Though grains contain some protein, this needs to be supplemented by high-quality protein, such as milk, meat and eggs provide.

Dr. Sure says the need for more protein may be much more extensive than has been supposed. Adequate protein is needed for growth and also upkeep of the body—for growing children and for adults and the elderly. Even small quantities of high-protein food combined with cereal grain products would improve nutrition in many families.

In studying possibilities of enriching popular dishes with low-cost protein, Dr. Sure found the food yeasts promising. He reports that these yeasts, used to the extent of one to three percent, in macaroni and cheese, Spanish rice, chicken pie, soups, gravies, hot rolls and biscuits, cakes, cookies and sandwiches, were successful in dining halls and cafeterias of the University of Arkansas and in a near-by veterans' hospital.

Dr. Sure has developed a low-cost, high-protein food as a meat extender. Composed largely of dried milk, it is supplemented with soy flour, vegetable shortening, calcium and iron salts and five important vitamins. It proved successful in more than 3,000 test meals served to college students, school children, and others. Palatable dishes prepared with it were: hamburger-like patties, meat loaves, chili con carne, ravioli, chicken loaf and pimiento-pickle loaf for cold slicing.

Some prepared breakfast foods already are being enriched with soy flour. Many commercially prepared foods could include these low-cost proteins, Dr. Sure says.

FOOD FOR THOUGHT. Modern Hospital, Chicago, Ill. Jan. 1951.

Hydraulic vs. Solvent

Steers fed hydraulic processed cottonseed meal made slightly more gain and had a slight advantage in cost of gain and net return over steers fed solvent processed cottonseed meal in experiments at the Texas Experiment Station.

However, the difference in gains was not considered statistically significant. There was very little difference in carcass weights or grades, and feed consumption.

CATTLE FEEDING STUDIES AT THE SPUR STATION, 1949-50. SOLVENT-PROCESSED COMPARED WITH HYDRAULIC-PROCESSED COTTONSEED MEAL. By P. T. Marion, J. H. Jones and C. E. Fisher. Progress Report 1297. Cattle Series 92. Nov. 29, 1950. Texas Agricultural Experiment Station, College Station, Tex.

APF-Aureomycin

Addition of APF-aureomycin to swine rations increased the rate of gain of the hogs whether the protein supplement was vegetable or animal, according to 1950 results at

* Survey of Iowa soybean growers showed 91% inoculated every seeding. Among those expressing preference, NITRAGIN led all other brands 3 to 1.

* Elmer Cheatwood, Georgia, made this two acre test. One acre's corn followed inoculated cover crop—on other acre no cover crop was used. 56.3 extra bushels of corn came from acre following inoculated lupine cover crop.

* Walter Latham, Ohio, proved how NITRAGIN inoculation prevents wasteful land use. Area not inoculated was a failure. Inoculated section, a lush success. Second cutting exceeded the first.

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the Purdue University Experiment Station.

The experiments were carried on with growing and fattening hogs both on pasture and on dry lot.

Soybean oil meal supplements were very effective in supplementing corn. Gains of the hogs receiving these supplements were about equal to those of similar hogs fed Supplement 5 (soybean oil meal, meat and bone scraps, menhaden fish meal, cottonseed meal and alfalfa meal), which has been a superior ration at Purdue.

Feeding of APF-aureomycin invariably resulted in an increase in corn consumption. This was in part if not entirely responsible for the increased rate of gain when APF was included in the ration. The improved appetite of the hogs receiving APF was the outstanding result of the experiments.

The efficiency of gain was without exception in favor of the rations containing APF.

THE EFFECT OF AN APF-AUREOMYCIN SUPPLEMENT IN SWINE RATIONS. By C. M. Vestal. Mimeo No. 51, Sept. 15, 1950. Purdue University Agricultural Experiment Station, Lafayette, Ind.

Antibiotics, B_{12}

Adding the antibiotic aureomycin, vitamin B-12 and an organic arsenic compound (3-nitro 4-hydroxyphenylarsonic acid) to a low-cost diet containing soybean oil meal produced better results with growing chicks than the usual high-efficiency diets well fortified with animal products. This is according to results at the Agricultural Research Center at Beltsville, Md.

The compounds were tested on Rhode Island Red chickens fed a diet containing yellow corn, soybean oil meal, mineral supplements, vitamins A and D feeding oil and synthetic vitamins.

Reports of several commercial feed laboratories that aureomycin stimulated more rapid growth in chickens than did vitamin B-12 alone were confirmed during the past year at Beltsville. The tests also showed that the effect of a combination of B-12 and the arsenic compound equalled the effect of B-12 and aureomycin. But when both were fed with B-12, the effect of all three was greater than the effect of any two. This indicates that the three have different functions. It seems likely that aureomycin and the arsenic compound stimulate growth indirectly through their effects on intestinal micro-organisms.

REPORT OF THE CHIEF OF ANIMAL INDUSTRY, AGRICULTURAL RESEARCH ADMINISTRATION, 1950. U. S. Department of Agriculture, Washington, D. C.

Miscellaneous

WHAT DETERMINES SOYBEAN PRICES. By G. L. Jordan, professor of agricultural economics, University of Illinois, Urbana, Ill. Bulletin 546. University of Illinois Agricultural Experiment Station, Urbana, Ill.

Based on much the same information as Dr. Jordan's speech of the same title before the 1950 convention of the American Soybean Association.

MARKETING GRAIN THROUGH A GRAIN EXCHANGE. Prepared by the University of Illinois College of Agriculture vocational agriculture service in cooperation with the Chicago Board of Trade. Educational Department, Chicago Board of Trade, Chicago 4, Ill.

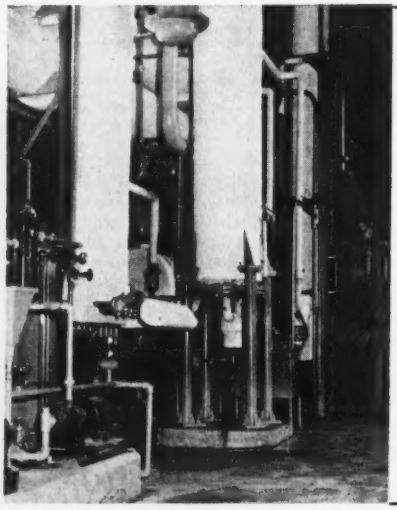
Sixteen page booklet describes the operation of the Chicago Board of Trade.

THE EFFECT OF SUPPLEMENTING CORN COB RATIONS FOR CATTLE WITH UREA, FISH MEAL, ACTIVE DRY YEAST AND APF. By W. M. Beeson and T. W. Perry, department of animal husbandry, Purdue University, Lafayette, Ind. Mimeo No. A. H. 53.

Report of an experiment now under way and to be completed this month.

CASE VISUAL EDUCATION MATERIALS. A listing of films, booklets and wall charts loaned free of charge to teachers, county agents, farm groups and others interested in advanced farming methods. J. I. Case Co., Inc., Racine, Wis.

INHERITANCE OF RESISTANCE OF SOYBEANS TO PERONOSPIRA MANSHURICA. By G. E. Geeseman, Wisconsin Agricultural Experiment Station, Madison, Wis. Agronomy Journal, Dec. 1950. Vol. 42, pages 608-613.



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GRITS and FLAKES... FROM THE WORLD OF SOY

◆ Announcement has been made of the appointment of E. Arnold Bisbee as manager of linseed and soybean oil sales for the Midwest territory for Falk & Co., at Chicago. He joined Falk & Co. in Jan. 1950. Prior to that he was associated with Bisbee Linseed Co., Philadelphia, organized by his father and uncles.

◆ Charlie Thompson, elevator man at the Des Moines, Iowa, soybean mill of Swift & Co., has received a suggestion award of $170 from Swift. His suggestion increased the efficiency of the scalping screen in the processing operation.

◆ John J. Woods & Sons, 433-439 Livestock Exchange Bldg., Kansas City 15, Mo., national distributors for Dixie feed mills and process equipment, has just made available a new bulletin featuring Dixie models 20 DD and 22 DD double-action feed mills. Helpful information includes specifications, grinding capacities, dimensions and other pertinent data.

◆ *Bemis Bros. Bag Co. announces the recent completion of multiwall plant and storage facilities at Peoria, Ill., costing more than half a million dollars.*

◆ Earl J. Brubaker has been appointed general manager of the soy and feed supplements department of the Borden Co.'s special products division, according to Charles F. Kieser, Borden vice president in charge of the division. Brubaker has been the division's director of procurement since 1943.

◆ A new catalog now ready for distribution describes "Viscorator" instruments that provide an instantaneous method for determining viscosity values for industrial products. For a copy of this literature write for Catalog 88, Fischer & Porter Co., 4030 County Line Road, Hatboro, Pa.

◆ Aureomycin is now being refined in Wales by a branch of the American Cyanamid Co., at Hirwaun. The factory will supply all British needs and a considerable quantity for export to the European continent. Basic supplies for making the drug will come from the Lederle Laboratories division of American Cyanamid Co. in the U. S.

◆ *"Metabolism of Soybean Leaves," by Samuel Aronof and Leo P. Vernon, both of Iowa State College Ames, was the prize-winning paper of 1950 of the Iowa Academy of Science.*

◆ The state of Missouri has compiled a list of industrial buildings for sale or lease in the state. They vary in size and construction and are all close to good transportation. For free circular write James D. Idol, industrial director of the Missouri Division of Resources and Development, Jefferson City, Mo.

◆ The latest information on recommended practices for soybean production in Georgia and Alabama is being sent to oil mills by J. Van Rogers, Jr., southeastern representative of the National Cottonseed Products Association's educational service, Atlanta, Ga.

◆ William H. Marriott, 62, secretary and traffic manager of the Sioux City, Iowa Grain Exchange, died Apr. 7 at his home. He was widely known as an authority on grain rates and traffic.

◆ *Marketing Grain Through a Grain Exchange is a new 16-page publication by the Chicago Board of Trade describing its operations.*

◆ Clarence H. Peterson, formerly of the Glidden Co.'s Durkee Famous Foods, has become associated with H. V. Nootbaar & Co., Pasadena, Calif., feed ingredient jobbers and brokers. He assumed his duties in charge of vegetable oil cake meals Apr. 1.

◆ American Mineral Spirits Co., 230 N. Michigan Ave., Chicago 1, Ill., has issued a soybean miscella concentration chart for processors. The chart covers

JOINS ST. LOUIS FIRM

JOHN H. NOBLE

John H. Noble, formerly assistant general manager of the Armour and Co. refinery division, Chicago, has joined the firm of Longstreet-Abbott and Co., commodity counsellors, of St. Louis.

Noble is a member of the American Economic Association and has served on economic advisory committees of the U. S. Chamber of Commerce, Grocery Manufacturers of America, and the American Meat Institute. He is a member of the Soybean Processors Association and has been active in the work of the Institute of Shortening Manufacturers.

Born and reared on an Iowa farm, Noble has maintained a close contact with the production and marketing of farm products as the owner and manager of Illinois farms.

Longstreet-Abbott and Co. serve as commodity counsellors to a number of leading soybean processors.

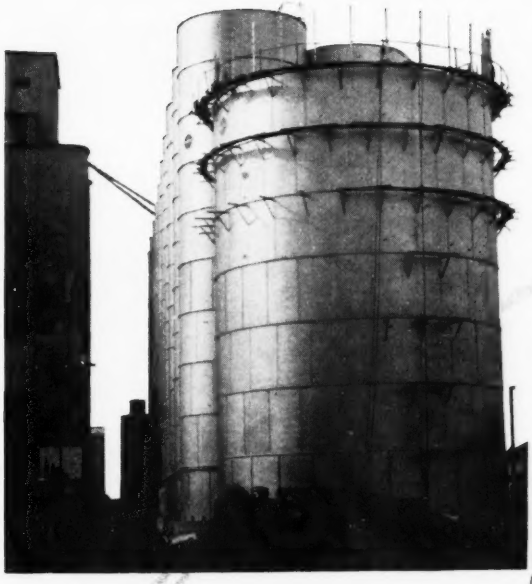
—s b d—

ADDS ELEVATOR STORAGE

Plans for constructing grain elevator storage capacity for an additional 5 million bushels have been announced by the A. E. Staley Manufacturing Co., Decatur, Ill.

The project, which will nearly double Staley's grain storage capacity at the Decatur plant site, has been awarded to the James Stewart Corp., engineers and contractors.

Staley officials estimated the cost of the project, including numerous changes required on existing facilities, at around 3 million dollars.



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soybean oil in commercial hexane and also presents miscella concentration charts in peanut and cottonseed oils.

◆ Dr. Austin M. Hanson has been appointed technical director of Grain Processing Corp., Muscatine, Iowa, replacing G. R. Christensen who has been promoted to operations superintendent. He will be in charge of research for Grain Processing Corp., and for Muscatine Processing Corp. and Kent Feeds, affiliated companies.

◆ "Soybean Solvent Extraction Plant," covering the plant of Borden's Soy Processing Co., at Waterloo, Iowa, was title of an article in the latest issue of S-A Conveyor, publication of Stephens-Adamson Mfg. Co., Aurora, Ill.

◆ *Mogge-Privett, Inc., Los Angeles ad agency, has been appointed to publicize Nu-Mello margarine and Purola shortening by Vegetable Oil Products Co., Inc., Wilmington, Calif.*

◆ Chemical plants division of Blaw-Knox Construction Co., Pittsburgh, Pa., announces W. F. O'Neill has been appointed to a newly created position of contract manager, and C. H. Marino has been named chief engineer of this department.

◆ Production of linseed meal by the Glidden Co. was about doubled when a new $250,000 extraction plant in Buena Vista, Calif., went into operation late in April. The company will also use the equipment for copra, soybeans, safflower and cottonseed.

◆ Alabama Grain and Elevator Co., owned by Memphis, Tenn., and Sikeston, Mo., interests, has let contract for the construction of a 2-million-dollar export grain elevator at Mobile, Ala. The company will export grain and soybeans.

◆ *Three-story office and storage building of Cargill, Inc., Cedar Rapids, Iowa, was completely burned out, and a five-story extraction tower was damaged following three explosions at the Cargill processing plant Apr. 29.*

TO CLEVELAND FIRM

WILLIAM G. GERSTACKER

William G. Gerstacker has been named chief engineer of the Colonial Iron Works Co., Cleveland, Ohio, it is announced. Colonial specializes in the fabrication of special processing equipment used in the chemical and allied industries.

Gerstacker has been associated with The V. D. Anderson Co. of Cleveland, as manager of the solvent extraction division for six years.

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WASHINGTON DIGEST

By PORTER M. HEDGE
Washington Correspondent for
The Soybean Digest

PRICES. The Office of Price Administration will get around fairly soon to a revamping of the soybean price regulation. A "stem-to-stern" overhauling of the order is planned by OPS officials to make ready for the 1951 soybean marketing season next fall.

Work on the revised price order is to get under way officially during the latter part of May when a meeting of the OPS soybean industry advisory committee is planned.

A complete new and "permanent" regulation is the aim—as detailed, officials say, as the price orders used during old OPA days.

Substantial changes in the regulations are expected. But they will deal with the important details of the order, rather than with the basic price schedule.

The only way price ceilings for soybeans could go is up, and officials feel, at this time, that an increase is not justified for the next marketing year. It will be well into the summer before the revised order is likely to be issued.

By that time, some changes may also be in the making on the price order covering soybean and cottonseed oils.

The preliminary indication is for a big cotton crop this year. An unofficial survey indicates the national acreage goal of 28.4 million will be equalled, if not exceeded.

A 16 million bale crop—or larger—appears now to be more a matter of weather and insects than anything else. If a large cottonseed crop should be harvested, it would enable OPS, as planned, to narrow the present three-cent spread between the ceiling prices of soybean and cottonseed oils when the new crushing season begins.

EXPORTS. Strong pressures against soybean spot prices are expected this summer. The present outlook is for export of somewhere around 40 million bushels of soybeans for the year ending next Oct. 1.

This export volume would be 15 million bushels more than officials have been estimating, at least for the record. One reason for not boosting the official estimate of exports last winter and spring was to help to avoid undue pressure against ceilings.

Actual soybean shipments as reported by the Census from Oct. 1950 through Feb. 1951, totalled approximately 15½ million bushels. Six million bushels more were scheduled for export during the March-April period, and another 5.3 million bushels for May.

The total shipped, and scheduled for export from October through May comes to 26.8 million bushels. With Japan cut off from Manchuria and forced to rely on the U.S. as its main source for soybeans, it's not unreasonable to expect average shipments of around 3 million bushels or more a month for the last four months of the marketing season.

A fair increase in export of soybean meal during the 1950-51 crushing season over the year before is also anticipated. U. S. foreign shipments totalled only 47,400 short tons during 1949-50, the low point in export volume since the end of World War II.

Exports of meal dragged along at 3,000 to 5,000 tons a month all through the fall and early winter, then suddenly zoomed to 32,600 short tons in February.

The official total of soybean meal exports from last October through Feb. 1951 is now 45,800 short tons. The total for the season now seems likely to reach around 75,000 short tons, though still well below the post-World War II peak of 150,000. The Census won't have the official March export figure until in May.

LOAN RATES. A proposal to raise interest rates on Commodity Credit Corporation grain loans, including soybeans, has been tabled by the CCC board, and probably will be dropped.

The plan was to boost the interest on CCC loans from 3 to 3½ percent, to increase the proportion of total interest received by lending agencies, and to double the schedule of minimum fees for servicing small loans.

At present, lending agencies receive 1½ percent interest and the minimum fee starts at $5 per loan.

FARM CREDIT. USDA officials hope to establish a new line of semi high-risk government credit as an aid to farmers in getting production. The proposed credit would be for emergency use similar to that of the old Regional Agricultural Credit Corporation.

Officials are trying to get some loan funds marked for emergency farm use under Section 302 of the

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Defense Production Act. Should this fail, Congress may be asked for special legislation.

FARM PRICE LAW. What tightening up of the price control act that is done before it is renewed June 30 is more than likely to be clamping more legal restrictions on the price control office itself.

That was the prevailing feeling here after the Office of Price Administration announced its triple rollback of beef prices—one now, one to come in August, and the third in October.

It's doubtful that the August and October beef rollbacks will go into effect. Congress is expected to prohibit them by adding further legal restraints into the law, and also putting additional legal strings on OPS to curb its freedom of action.

Farm Bloc leaders are as much amused as they are angry over the meat control order. Though in the minority, the bloc splits down party lines. Congress will write the new price control rules. And the Farm Bloc is confident it can prevent any further major curbs on agriculture.

The beef order went through at the insistence of Price Director DiSalle. USDA fought it all the way to the top, but DiSalle got there first.

To DiSalle and Economic Stabilizer Johnston meat is a symbol. If they were going to control anything in the food line it had to be meat. Part of the motive behind the beef ceiling order was a desire to make a showing with the public.

USDA opposed the order mainly on grounds that it would disrupt the beef marketing pattern; result in abnormally heavy marketings during the next six months, and a shortage later on.

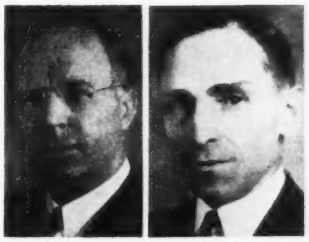
The President's proposal to use parity at the start of a marketing season as the minimum price ceiling, and let it stand for the marketing period, received a mixed reaction.

It would be acceptable to most Farm Bloc leaders as a fair minimum standard for agriculture, especially for grains. It would not affect soybeans, meal, or cotton, which already are controlled at above parity prices. USDA supports the plan, providing profits and wages are put under comparable restraint. It opposes even this moderate "freeze" of parity unless parallel measures are taken on profits and wages.

However, a powerful Southern bloc is braced against any change in the farm provisions of the price law. This is led by Senator Maybank of South Carolina, chairman of the Senate Finance Committee through which new legislation will have to pass, and by Senator Russell of Georgia. This makes it doubtful that any substantial changes in farm provisions of the law will be approved this summer.

—s b d—

VETERAN UI MEN RETIRE



BURLISON CARROLL

Two veteran members of the University of Illinois faculty, both holding top ranking positions in the College of Agriculture and both known to the soybean industry, are slated for retirement this spring.

They are W. L. Burlison, head of the agronomy department, and W. E. Carroll, associate director of the agricultural experiment station.

Dr. Burlison is an internationally known expert on soybeans with which he has been working for 46 years.

He got his master's degree at the University of Illinois in 1908, became a full professor there in 1915, and head of the agronomy department in 1920.

He helped organize both the American Soybean Association and the National Soybean Processors Association, and has served as president and secretary of ASA, and is now an honorary life member.

Dr. Carroll was the first student to major in animal nutrition at the University of Illinois, where he got his masters degree in 1911.

He was appointed head of the animal husbandry department in 1938, and associate director of the Illinois Agricultural Experiment Station in 1947.

Dr. Carroll appeared on the convention program of the American Soybean Association in 1944.

Market Street

We invite the readers of THE SOYBEAN DIGEST to use "MARKET STREET" for their classified advertising. If you have processing machinery, laboratory equipment, soybean seed, or other items of interest to the industry, advertise them here.

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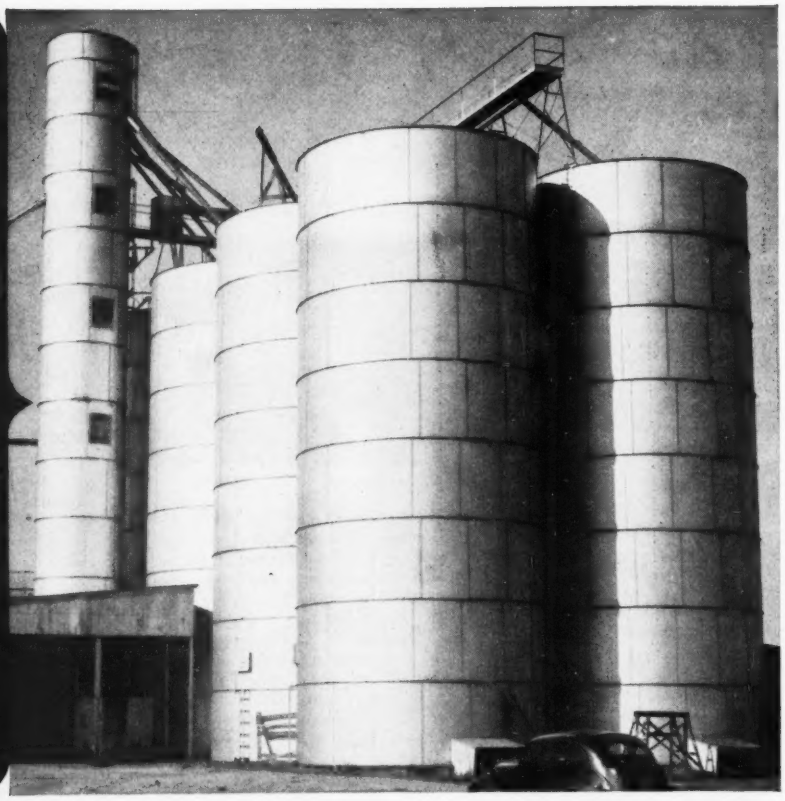

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IN THE MARKETS

April Meal Market Stronger

The soybean oil meal market for April was stronger, reversing the trend of the previous month. This was due to increased demand for export as well as for domestic use. Net gain for 44 percent meal for the month was $6.

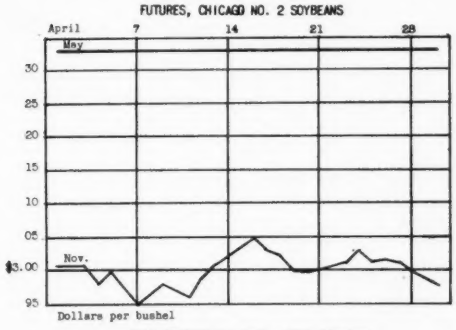
The better meal market was not reflected in soybean or oil futures. May soybeans remained at the $3.33 ceiling during April with November showing a slight loss. However, scarcity of offerings from the country help to maintain prices for old crop beans.

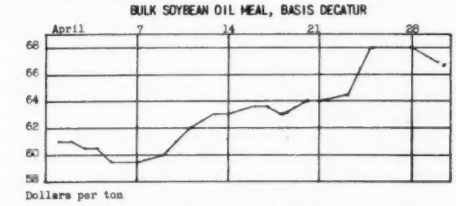
Vegetable oils on the whole weakened, as shown by a loss of 2 cents in coconut oil for the month. Cash crude cottonseed and soybean oils remained at their respective ceilings, except that soybean oil had a tendency to break under the ceiling a few times.

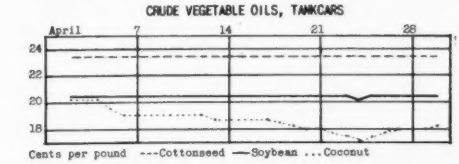
Production of both 41 and 44 percent meal was heavy, and it was reported being shipped out by processors as fast as it was produced. Attention was focused on export developments with reports of both Canadian and domestic supplies being bought by export interests.

By the last of April soybean oil meal was reaching its highest level in seven weeks.

A fair boost in meal exports during the 1950-51 season over a year ago is in prospect. Exports from Oct. 1950 through Feb. 1951 reached 47,400 short tons. Total for the season ending next Oct. 1 may reach around 75,000 tons compared with 47,400 short tons during the 1949-50 season.





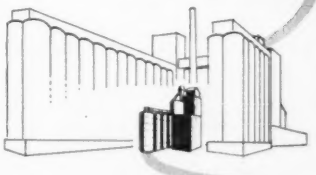


THE PART PURINA PLAYS IN

THE SOYBEAN CYCLE

From your farm, your soybeans move to

A country elevator or directly to

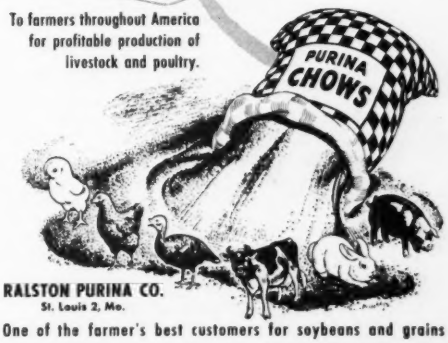


One of Purina's six soybean processing plants or one of many other processing plants. Soybean meal from both sources goes to

A Purina Chow Mill, where the meal from your soybeans and other ingredients are combined to make research-proved Purina Chows

Which are distributed through Purina Dealers

To farmers throughout America for profitable production of livestock and poultry.



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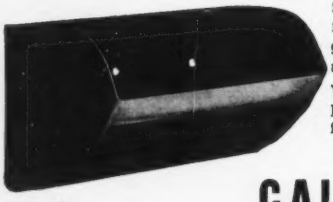
Is where they have no earthly use for an elevator cup of **any** kind. But pack your bag and travel to any spot on the globe where grain **is** grown and stored and you'll find the popular choice is the world famed



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Thirty-seven Years of Service to the Grain Trade

The slowness in soybean and other vegetable oils during April was due to poor refiner business. Most refiners were well stocked up with crude oil. Shortening sales were slow with total shipments well under the same period a year ago.

An increase in export interest in vegetable oils and good margarine sales failed to correct the easiness in the oil market. Most buyers and sellers were on the sidelines much of the month with little pressure on the market from either direction.

May No. 2 soybeans Chicago were at the $3.33 ceiling all month. November No. 2 beans opened at $3.00½ and closed at $2.97½. Low was $2.95½ Apr. 7. High was $3.04½ Apr. 16.

Bulk soybean oil meal, 44 percent basis Decatur, opened at $61 and closed at $67. Low was $59.50 Apr. 5-7. High was $68 Apr. 25-28.

Crude soybean oil in tankcars sold at the 20¼-cent ceiling all month except for a one-fourth-cent break Apr. 24.

MEMPHIS SOYBEAN OIL FUTURES APR. 30*

Contract 100 tons, sacked, Decatur. May 73.00@73.15; July 76.50s; Oct. *63.00a; Dec. *61.95@62.15; Jan. *61.25@61.75; Mar. *60.50@61.50. Sales: 11,600 tons.

CHICAGO SOYBEAN OIL FUTURES CLOSINGS APR. 30*

May 20.40b-.49a; July 20.05b-.13a; Sept. 18.62b-.67a; Oct. 16.70b-.75a; Nov. 16.10b-.30a; Dec. 15.95b-16.05a; Jan. 15.80b-.95a; Mar. 15.60b-.75a.

NEW YORK SOYBEAN OIL FUTURES CLOSINGS APR. 30*

Nov., 16.25b; Jan., 15.75b; May '52, 15.45b; July and Sept., 15.00b.
a—Asked. b—Bid. s—Sales. *—Bulk.

FUTURES TRADING AND OPEN CONTRACTS IN SOYBEAN OIL MEAL ON MEMPHIS MERCHANTS EXCHANGE CLEARING ASSOCIATION

(As reported by members, in tons)

	Volume of trading	Open Contracts		Volume of trading	Open Contracts
Mar. 30	7,200	196,100	Apr. 16	2,000	195,300
Mar. 31	4,500	197,500	Apr. 17	12,000	192,000
Apr. 2	7,100	198,600	Apr. 18	10,400	191,300
Apr. 3	11,000	202,000	Apr. 19	1,800	191,700
Apr. 4	13,500	200,500	Apr. 20	7,300	191,000
Apr. 5	15,200	197,900	Apr. 21	1,300	191,000
Apr. 5	7,100	198,300	Apr. 23	8,700	188,800
Apr. 7	3,900	198,300	Apr. 24	9,700	187,400
Apr. 9	2,400	198,000	Apr. 25	6,400	187,300
Apr. 10	9,300	197,500	Apr. 26	8,300	188,500
Apr. 11	10,000	196,000			
Apr. 12	9,000	196,200	Total for 24 days reported	175,300	
Apr. 13	5,600	196,300			
Apr. 14	1,600	196,600			

● **FACTORY USE SOYBEAN OIL.** Factory production of crude soybean oil in February totaled 215,973,000 lbs. compared with 240,745,000 lbs. in January, reports Bureau of the Census.

Factory production of refined soybean oil in February totaled 171,360,000 lbs.; in January, 201,298,000 lbs.

Factory consumption of crude soybean oil in February was 183,691,000 lbs.; in January 214,987,000 lbs. Consumption of refined soybean oil in February was 162,202,000 lbs.; in January, 184,543,000 lbs.

Factory and warehouse stocks of crude soybean oil totaled 131,235,000 lbs. Feb. 28; 113,499,000 lbs. Jan. 31. Stocks of the refined oil totaled 70,495,000 lbs. Feb. 28; 65,175,000 lbs. Jan. 31.

Usage of crude soybean oil in January included: soap 139,000 lbs.; paint and varnish 385,000 lbs.; lubricants and greases 19,000 lbs.; other 1,283,000 lbs.

Usage of refined soybean oil in January included: shortening 62,395,000 lbs.; margarine 6,187,000 lbs.; other edible 7,083,000 lbs.; paint and varnish 5,320,000 lbs.; lubricants and greases 31,000 lbs.; other inedible products 6,352,000 lbs.

Hydrogenated edible soybean oil entered into the following uses in January: shortening 27,249,000 lbs.; margarine 46,802,000 lbs.; other edible uses 861,000 lbs.; inedible uses 5,000 lbs.

● PROCESSING OPERATIONS. Reported by Bureau of Census, Department of Commerce for January, February.

PRIMARY PRODUCTS EXCEPT CRUDE OIL, AT CRUDE OIL MILL LOCATIONS: PRODUCTION, SHIPMENTS AND TRANSFERS AND STOCKS, FEBRUARY 1951—JANUARY 1951

Products	Production		Shipments and transfers		End of month stocks	
	Feb. 1951	Jan. 1951	Feb. 1951	Jan. 1951	Feb. 28, 1951	Jan. 31, 1951
SOYBEAN:						
Cake & Meal†	528,759	589,771	517,097	569,635	104,230	92,568
Lecithin‡	1,723,271	1,873,863	1,742,668	1,790,960	620,168	639,565
Edible soy flour, full fat†	430	618	485	620	133	188
Edible soy flour, other†	4,693	5,784	5,144	5,696	1,200	1,651
Industrial soy flour†	2,171	2,168	2,051	2,321	559	439

† Unit of measure in tons. ‡ Unit of measure in pounds.

SOYBEANS: RECEIPTS, CRUSHINGS AND STOCKS AT OIL MILLS, BY STATES, FEBRUARY 1951—JANUARY 1951
(Tons of 2,000 pounds)

State	Receipts at mills		Crushed or used		Stocks at mills	
	Feb. 1951	Jan. 1951	Feb. 1951	Jan. 1951	Feb. 28, 1951	Jan. 31, 1951
U. S.	503,286	797,805	674,095	752,238	2,189,637	2,360,446
Arkansas	(§)	(§)	18,430	17,070	81,765	108,437
Illinois	214,281	372,754	247,087	269,100	784,956	817,762
Indiana	44,158	66,479	52,894	53,266	209,508	218,244
Iowa	107,787	152,254	104,398	117,323	305,294	301,905
Kansas	14,949	16,811	16,910	18,317	24,402	26,363
Kentucky	10,145	21,570	15,320	20,091	72,911	78,086
Minnesota	22,024	26,309	26,384	25,906	47,797	52,157
Missouri	(†)	18,217	24,501	24,922	(†)	121,037
Nebraska	(§)	6,067	4,698	5,628	25,264	30,567
N. Carolina	1,050	5,401	10,510	14,646	36,144	45,604
Ohio	54,126	79,421	66,770	73,895	249,863	262,507
Oklahoma	1,866	(†)	3,645	5,803	(†)	(†)
Texas	333	1,298	4,358	3,573	10,389	14,414
All other	41,414	40,846	78,790	102,698	341,344	283,363

§ Receipts exceeded by reshipments of beans previously received and held in the State. U. S. receipts are on a net basis, excluding transfers between mills. † Included in "All other" to avoid disclosure of individual operations.

SOYBEAN PRODUCTS: PRODUCTION AND STOCKS AT OIL MILL LOCATIONS, BY STATES, FEBRUARY 1951—JANUARY 1951

State	Crude oil (thousand pounds)				Cake and meal (tons)			
	Production		Stocks		Production		Stocks	
	Feb. 1951	Jan. 1951	Feb. 28, 1951	Jan. 31, 1951	Feb. 1951	Jan. 1951	Feb. 28, 1951	Jan. 31, 1951
U. S.	215,973	240,745	50,226	43,477	528,759	589,771	104,230	92,568
Arkansas	5,389	4,971	1,089	768	14,574	12,777	2,096	3,373
Illinois	83,876	90,997	13,772	11,821	186,555	204,314	30,508	17,485
Indiana	17,236	17,419	2,835	2,532	41,630	42,095	(*)	7,698
Iowa	32,877	37,011	9,256	7,932	85,301	96,430	6,551	6,443
Kansas	5,293	5,857	1,506	1,332	14,079	15,015	2,550	1,500
Kentucky	5,388	6,731	661	780	11,808	15,260	695	1,388
Minnesota	8,297	8,103	3,695	2,326	20,970	20,419	2,090	1,773
Missouri	6,600	7,452	1,769	1,697	18,735	19,830	1,992	2,622
Nebraska	1,411	1,705	499	431	4,020	4,799	(*)	(*)
N. Carolina	2,995	4,046	1,260	1,010	8,210	11,574	9,728	11,577
Ohio	21,204	23,291	2,760	3,574	53,474	58,401	3,003	3,423
Oklahoma	905	1,706	291	191	2,532	4,803	4,939	5,606
Texas	1,327	917	520	475	3,474	2,916	2,991	3,138
All other	23,175	30,629	10,313	8,608	63,397	81,138	37,087	26,542

* Included in "All other" to avoid disclosure of individual operations. Prepared by Bureau of the Census, Industry Division, Chemicals and Wood Products Section.

● SOYBEAN GLUE. Consumption of soybean glue by the softwood plywood industry in January was 4,923,000 lbs., compared with 4,540,000 lbs. in December; and 3,128,000 lbs. in Jan. 1950.

Consumption of phenolic resin glue in January was 4,959,000 lbs.; and of all glues, 10,546,000 lbs.

Stocks of soybean glue Jan. 31 totaled 3,256,000 lbs. compared with 2,467,000 lbs. Dec. 31; and 2,017,000 lbs. Jan. 31, 1950.

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● **EXPORTS.** U. S. exports of soybeans and soybean oil for February, as reported by the Office of Foreign Agricultural Relations:

Soybeans	Soybean oil (crude)	Soybean oil (refined)	Total
1,841,523 bu.	9,190,240 lbs.	7,671,236 lbs.	
	On a Soybean Equivalent Basis		
1,841,523 bu.	939,673 bu.	831,440 bu.	3,612,636 bu.

The U. S. Department of Agriculture has announced that approximately 141,000 long tons of soybeans have been programmed for commercial and government export in May. This is about 5.3 million bushels.

Department officials state that practically the entire quantity has been sold by exporters or committed by Commodity Credit Corporation. Ships have been named to lift most of the tonnage.

The May total includes France 4,000 long tons; Norway 2,000 long tons; and U. S., Pacific 135,000 long tons.

● **STOCKS ON FARMS.** Soybean farm stocks on Apr. 1 are estimated at 46.1 million bushels, reports the crop reporting board of the U. S. Department of Agriculture. This is slightly above the 45.8 million bushels on farms a year ago and is the third highest Apr. 1 farm stocks of record—being exceeded only in 1943 and 1949.

The 1943-49 average Apr. 1 farm stocks is 37.4 million bushels.

State	SOYBEANS Average 1943-49	1950	1951	State	SOYBEANS Average 1943-49	1950	1951
N. Y.	71	22	27	Del.	200	224	142
N. J.	83	61	109	Md.	186	141	131
Pa.	146	95	78	Va.	332	548	379
Ohio	4,495	4,530	5,111	W. Va.	4	2	3
Ind.	5,340	6,576	5,250	N. C.	885	1,056	1,124
Ill.	12,454	15,383	11,370	S. C.	42	124	132
Mich.	557	759	685	Ga.	28	39	71
Wis.	214	114	104	Ky.	292	330	265
Minn.	1,680	3,318	4,096	Tenn.	122	275	346
Iowa	7,292	8,630	9,720	Ala.	81	73	92
Mo.	1,595	1,800	4,383	Miss.	293	392	677
N. Dak.	16	96	90	Ark.	386	466	584
S. Dak.	84	143	272	La.	97	75	36
Nebr.	87	111	155	Okla.	13	17	29
Kans.	338	378	711				
				U. S.	37,427	45,778	46,114

● **INSPECTIONS.** Inspected receipts of soybeans in March showed continued improvement in quality, according to reports to the Department of Agriculture. Eighty-nine percent of the March inspections graded No. 2 or better, an increase of 15 points over the October inspections. This compares with 83 percent grading No. 2 or better in February, 80 percent in Mar. 1950, and 66 percent the 10-year March (1940-49) average.

March inspections totaled 7,508 cars compared with 7,262 in February and 6,166 in March a year ago. Inspected receipts for October through March amounted to 99,398 this season compared with 76,620 cars for the same months last season.

● **SOYBEAN STOCKS.** Production and Marketing Administration's commercial grain stock reports.

	Apr. 2	Apr. 9	Apr. 17	Apr. 24	May 1
Atlantic Coast	264	219	312	320	257
Gulf Coast	475	680	717	773	852
Northwestern and Upper Lake	1,214	1,183	1,204	1,155	784
Lower Lake	5,573	5,289	4,459	4,167	3,939
East Central	3,030	2,829	2,821	2,859	2,529
West Central Southwestern & Western	1,801	1,731	1,528	1,422	1,249
Pacific Coast	121	270	446	293	350
Total current week	12,418	12,191	11,487	10,989	9,930
Total Year ago	10,241	9,507	9,406	9,659	9,659

● **SHORTENING SHIPMENTS.** Reported by the Institute of Shortening and Edible Oils, Inc., in pounds.

Week ending Mar. 31	2,953,559
Week ending Apr. 7	2,617,589
Week ending Apr. 14	2,967,548
Week ending Apr. 21	3,419,788

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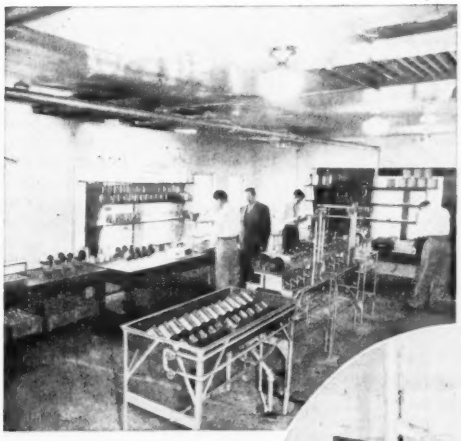

The Decatur, Ill., laboratory is equipped with the most modern equipment for refining soybean oils.

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Comments on Our "Six Right Steps"

TO THE EDITOR:

The letter I received from you seems to have been written specifically for the area in which I am teaching . . . I have been trying to stress the importance of increased production per acre to meet the '51 16-million bale (cotton) goal.

Last year the largest soybean crop was made in the history of this area, and certainly the grower made money on them. Yet many farmers want to put all their eggs in one basket and go all out for cotton this year.

As crops are being planned for the coming year, I would like to have a class on "Place of Soybeans on My Farm" as soon as possible.—*Robert Lee Box, veteran agriculture instructor, Central High School, Caraway, Ark.*

Inoculation Question

TO THE EDITOR:

I have been reading the Soybean Digest for over four years and enjoy it very much.

In the March issue on the "Six Right Steps to Peak Production," I suggest that you get in touch with the experiment stations in the South and see if they will recommend inoculation.

All the information we get on soybeans is from Missouri and states farther north, and once in a while a little from Arkansas.

It wouldn't hurt if the Association would send one of its representatives to this part of the country so we could get a little good out of the Digest.—*James W. King, Foules, La.*

Raised as Supplement

TO THE EDITOR:

I fully agree with you concerning the careless waste of fertility when production goals are increased as has been asked for this coming year. All anyone has to do is to look about and he can readily see the results of all out production of the last war. This will take many, many years to rebuild.

Many of my veterans are interested in producing soybeans. Not from a commercial standpoint but as a supplement for high protein feed which they have to buy in winter to maintain high milk production.

I would like to present the soybean story to them through the three films you have offered.—*Fred S. Schneider, veterans farm training, Stanley Public Schools, Stanley, Wis.*

LETTERS

Mississippi Delta

TO THE EDITOR:

On reading the March issue of the Soybean Digest I was impressed by the article, "Six Right Steps to Peak Production." I am requesting 150 copies to be distributed in this farming area which is located in the heart of the Mississippi Delta.

It is believed that a sizeable acreage will be planted to soybeans this year even though cotton acreage restrictions have been lifted.

Planting will start no later than Apr. 10 in this area.—*James T. Davis, Merigold, Miss.*

Readable Facts

TO THE EDITOR:

I have just received and read thoroughly the contents of the "Six Right Steps for Soybean Production."

It is certainly the most important facts in a readable condition for school students that could be put in so small a space. It will be of supreme interest to use this material before a class on the production of soybeans.

Congratulations on a good job well prepared and timely.—*B. L. Hodnett, teacher of vocational agriculture, New Bern, N. C.*

Soys Major Crop

TO THE EDITOR:

Your form letter regarding outstanding films on soybean production was received. We are very much interested in these films from the teaching standpoint for our agricultural classes at this school.

For our locality soybeans are our major crop and it may be possible in addition to serving our classes with these films, to gather much community interest in them.—*Francis H. Kales, assistant instructor of vocational agriculture, Mathews, Va.*

Veterans Teacher

TO THE EDITOR:

I have been trying to persuade some of my students in the veterans class to plant soybeans this spring and I certainly feel that one of your movies will help.

I also would like to have 25 copies of Six Right Steps to Peak Soybean Production.—*W. A. Thornburrow, special veterans' instructor, Goff Rural High School, Goff, Kans.*

Indiana

TO THE EDITOR:

Thank you for making the leaflets and films on soybean production available to this class of veterans-on-farm trainees. While not in an area of extensive soybean production, I feel that the material would definitely be useful to this group.—*Ralph Ewalt, veterans instructors, Greensburg, Ind.*

Kansas

TO THE EDITOR:

We are on the edge of the soybean producing belt and several fields in the neighborhood were quite profitable. I would like to obtain these films for use in my class.—*Howard Lindholm, supervisor, Cheney Public Schools, Cheney, Kans.*

Booklet a Dandy

TO THE EDITOR:

I will appreciate 25 copies, if available, of Six Right Steps for Peak Soybean Production.

I have a copy of this booklet. It is a dandy.—*Kemp R. Catlett, president, First National Bank, Homer, Ill.*

THE PRESS

Oleo or Else!

A court recognized Mrs. Agnes Wilkins as a true and loyal daughter of this dairy state.

A court granted Mrs. Wilkins, 67, a divorce from her husband, Amos.

She complained that Wilkins, a native of Oklahoma, wanted her to "use oleomargarine instead of butter" and Judge Roy Proctor agreed to her charges of "cruel and inhuman treatment."—*Northwest Cooperator*, Madison, Wis.

LITTLE ASA'S BULLETIN

Time to put it down in your date book. ASA'S 1951 convention is Sept. 6, 7 and 8 at Des Moines. Read about it on page 6.

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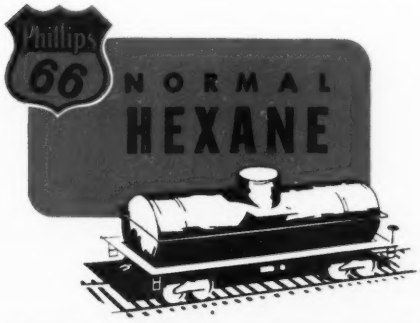

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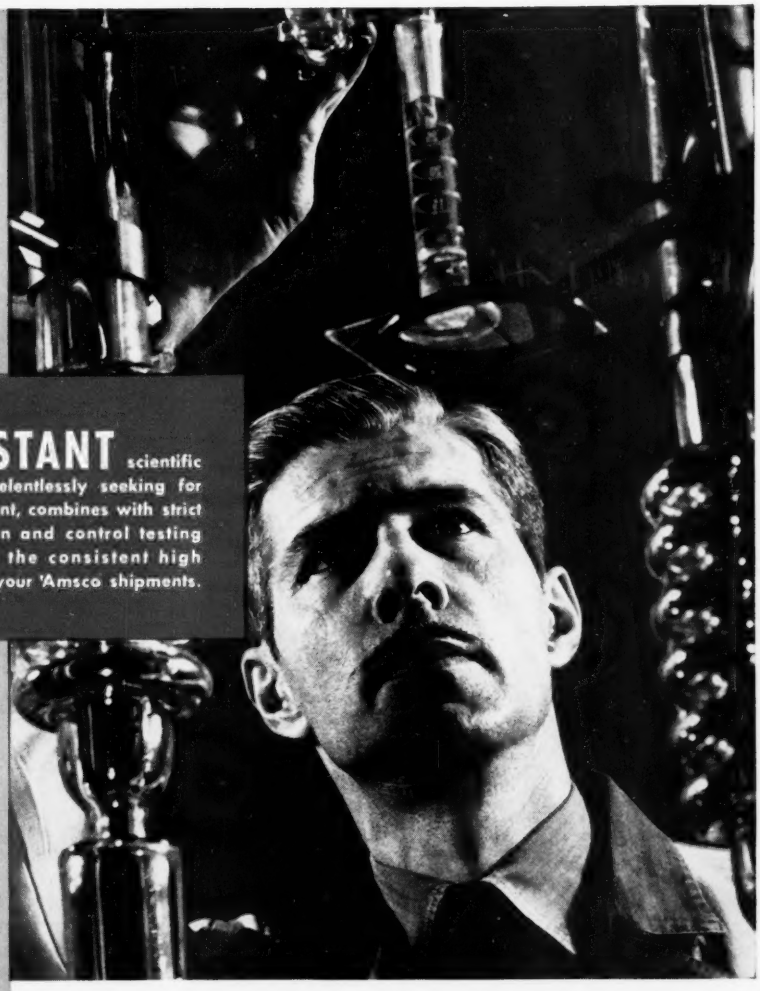

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